DOCUMENT RESUME

ED 354 011 IR 054 388

AUTHOR	Dosa, Marta L., Ed.; Froehlich, Thomas J., Ed.
TITLE	Information Manpower Forecasting. Papers Presented at the FID/ET Seminar (Espoo, Finland, August 24-27, 1988).
INSTITUTION	United Nations Educational, Scientific and Cultural Organization, Paris (France). General Information Programme.
REPORT NO	PGI-91/WS/10
PUB DATE	91
NOTE	294p.
PUB TYPE	Collected Works - Conference Proceedings (021) -- Reports - Research/Technical (143)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Developed Nations; Developing Nations; *Employment Patterns; Foreign Countries; Information Science Education; *Information Scientists; *Labor Needs; *Library Personnel; Library Surveys; Long Range Planning; Occupational Surveys; Predictive Measurement; Questionnaires; Research Methodology; Tables (Data)
IDENTIFIERS	United States

ABSTRACT

This collection contains 20 papers written by educators, administrators and information scientists who had conducted manpower surveys in the library and information fields: (1) "Background and Evolution of Educational Planning and Forecasting for Information Manpower" (Yves Courrier); (2) "Indicators for the Emerging Information Market" (Nick Moore); (3) "Information Scientists in the English-Speaking Caribbean: Challenges and Responses in the Development Process" (Gloria Greene, Reive Robb); (4) "National Survey on Manpower in Libraries, Information Centres and Archives in Thailand" (Suwakhon Phadungath); (5) "Predicting the Future: Manpower Forecasting for the Library and Information Professions in Southern Africa" (J. R. Neill, D. M. Mbaakanyi); (6) "Problems in Forecasting Manpower Needs" (Monique Jucquois-Delpierre); (7) "Electronic Measures for Human Resource Research" (Anthony Debons, Mariano Maura-Sardo, Anne Thompson); (8) "The Intersection of Communication and Information: Implications for Human Resources Forecasting" (Royal Colle); (9) "Monitoring the Library and Information Workforce in the U.K." (Christopher Turner, Felicity Bray); (10) "The Information Professionals: A Study in an Emerging Industry" (Gale Moore); (11) "Information Personnel Surveys: The Moroccan Experience" (Mohammed Benjelloun); (12) "Professional Profile of the Librarian in Colombia" (Martha Alicia Perez, Maria Clemicia Molina); (13) "A Survey of Hebrew University Library Science Graduates, 1957-1984" (Bluma Peritz, Tamar Shagam); (14) "Employment Patterns and Curriculum Development" (F. E. Wood); (15) "Use of the Delphi Method in Library and Information Science Curriculum Development and Revision in Developing Countries" (Jaime Robredo, Tanja Botelho, A. R. E. Corte); (16) "A Historical Survey of the Different Methods of Qualitative Analysis Used by the CEREQ for Studying Jobs in Information and Data Processing" (Diane Barrat); (17) "Manpower Survey and Analysis for Library and Information Sciences in Kenya" (Joseph Ojiambo); (18) "Malaysian Manpower Survey of Libraries, Information Services and Archives: 1986" (Molina Nijhar, Norma Abu Seman); (19) "Manpower and Training Needs in Archives and Records Management" (Michael Cook); and (20) "Cataloguing Rules and Database Production--Implications for Manpower Training in a Developing Country" (Bjorn Tell). Most of the papers include references. (KRN)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PGI-91/WS/10

ED354011

Information manpower forecasting

Papers presented at the FID/ET seminar, Espoo, Finland 24-27 August 1988

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL IN **OTHER THAN PAPER COPY** HAS BEEN GRANTED BY
C. Coudert-Schklowski

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

General Information Programme and UNISIST

United Nations Educational,
Scientific and Cultural Organization

Paris, 1991

PG1-91/WS/10

INFORMATION MANPOWER FORECASTING

PAPERS PRESENTED AT THE FID
EDUCATION AND TRAINING COMMITTEE SEMINAR
ESPOO, FINLAND
24-27 AUGUST 1988

Edited by

Marta L. DOSA
Syracuse University, U.S.A.

and

Thomas J. FROEHLICH
Kent State University, U.S.A.

with

Hannah M. King

General Information Programme and UNISIST
United Nations Educational, Scientific and Cultural Organization

TABLE OF CONTENTS

Introduction: **Page**

FID/ET Pre-Congress Seminar, Finland, 1988
Marta L. DOSA and Thomas J. FROEHLICH..... 6

Session I: Conceptual Perspectives
Chair: Sinikka KOSKIALA (Finland)

Background and Evolution of Educational Planning and Forecasting for Information Manpower -- Yves COURRIER (UNESCO) 22

Indicators for the Emerging Information Market
Nick MOORE (U.K.)..... 30

Session II: The Information Labor Market in Economically Developing Countries
Chair: Björn TELL (Sweden)

Information Scientists in the English-speaking Caribbean: Challenges and Responses in the Development Process -- Gloria GREENE (Jamaica) and Reive ROBB (Jamaica)..... 36

National Survey on Manpower in Libraries, Information Centres and Archives in Thailand -- Suwakhon PHADUNGATH (Thailand)... 60

Predicting the Future: Manpower Forecasting for the Library and Information Professions in Southern Africa -- J.R. NEILL (Botswana) and D.M. MBAAKANYI (Botswana)..... 80

Session III: Approaches to Manpower Planning in the Information and Communication Fields
Chair: Toni Carbo Bearman (U.S.A.)

Problems in Forecasting Manpower Needs -- Monique JUCQUOIS-DELPIERRE (Federal Republic of Germany)..... 97

Electronic Measures for Human Resource Research -- Anthony DEBONS (USA), Mariano MAURA-SARDO (Puerto Rico) and Anne J. THOMPSON (Puerto Rico)..... 109

The Intersection of Communication and Information: Implications for Human Resources Forecasting -- Royal D. COLLE (U.S.A.).....115

Session IV: Quantitative Methodologies: Issues and Applications
Chair: Guy GARRISON (U.S.A.)

Monitoring the Library and Information Workforce in the U.K. -- Christopher TURNER (U.K.) and Felicity BRAY (U.K.)..... 126

The Information Professionals: A Study in an Emerging Industry -- Gale MOORE (Canada)..... 156

Enquêtes sur la Main d'Oeuvre du Secteur Documentation: Cas de l'Experience Marocaine Enquête Nationale sur le Personnel de l'Information -- Mohammed BENJELLOUN (Morocco)..... 171

Session V: Surveys of Professionals and Employment in Librarianship
Chair: Bimpe ABOYADE (Nigeria)

Professional Profile of the Librarian in Colombia -- Martha Alicia PEREZ (Colombia) and Maria Clemicia MOLINA (Colombia). 184

A Survey of Hebrew University Library Science Graduates, 1957-1984 -- Bluma C. PERITZ (Israel) and Tamar SHAGAM (Israel)... 199

Employment Patterns and Curriculum Development -- F.E. Wood (U.K.)..... 210

Session VI Methodological Issues of Assessing Manpower in the Information Sciences and Librarianship
Chair: Iraset PAEZ-URDANETA (Venezuela)

Use of the Delphi Method in Library and Information Science Curriculum Development and Revision in Developing Countries -- Jaime ROBREDO (Brazil), Tanja M.G. BOTELHO (Brazil), and A.R.E. CORTE (Brazil)..... 223

A Historical Survey of the Different Methods of Qualitative Analysis Used by the CEREQ for Studying Jobs in Information and Data Processing -- Diane BARRAT (France)..... 240

Manpower Survey and Analysis for Library and Information Sciences in Kenya -- Joseph B. OJIAMBO (Kenya)..... 248

Session VII: Implications for Education and Training
Chair: Marjatta OKKO (Finland)

Malaysian Manpower Survey of Libraries, Information Services and Archives: 1986 - Molina S. NIJHAR (Malaysia) and Norma Abu SEMAN (Malaysia)..... 260

Manpower and Training Needs in Archives and Records Management -- Michael COOK (U.K.)..... 275

Cataloguing Rules and Database Production - Implications for Manpower Training in a Developing Country -- Björn TELL (Sweden)..... 283

INTRODUCTION[1]

As the needs of societies and individuals for national planning are evolving from year to year, from decade to decade, and from generation to generation, their needs for information are also undergoing dramatic transformations. These changes in the way people use information and technology can be allowed to surprize educational planners and information professionals, who then struggle through a series of crises and ad-hoc policies, or they can be anticipated -- even if not predicted -- by thoughtful planning.

The information profession, bearing the responsibility for the effective management of organizational decision-making information, libraries, archives, records centers and all kinds of information dissemination programs, is continuously faced by the monumental task of planning for the future. In each country, this task includes identification of the current characteristics of the information workforce, analysis of current professional development needs, diagnosis of the gap between the demand for education programs and the supply, and an attempt to project demand into the future. Effective resource allocation, curriculum planning, and the interrelations of professional, occupational and continuing education depend on the understanding of current and prospective needs. Thus, information professionals must assume a leadership role in representing the requirements of information users, resources and systems in national and regional planning.

FID/ET SEMINAR ON INFORMATION MANPOWER FORECASTING

The International Federation for Information and Documentation (FID) has been active in education and training for many years. Its Education and Training Committee (FID/ET), established in 1953 and reconstituted in 1959, has been responsible for identifying problems at both the regional and international levels, for stimulating action, and for influencing the exchange of ideas and experience among experts. As a significant element of its program, FID/ET has organized a series of worldwide seminars and workshops. The latest of these, the SEMINAR ON INFORMATION MANPOWER FORECASTING, was held 24-27 August 1988 in Otaniemi, Espoo, Finland, cosponsored by UNESCO's General Information Programme (PGI) and FID, and hosted by the Finnish Society for Information Services in conjunction with the 44th FID Conference and Congress.

---

[1] The text of the Introduction was first published in International Forum on Information and Documentation, V. 14, No. 2, April 1989, pp. 9-14. We gratefully acknowledge permission from Prof. P.V. Nesterov, Editor-in-Chief, to reprint the text here with slight revisions.

UNESCO'S ROLE

UNESCO's initiative in bringing together educators and policy makers from both developing and industrialized countries was a key factor in the seminar's success. The origins of UNESCO's project for information workforce surveys and planning may be traced to 1978, when a Pilot Project was introduced in the Caribbean region. The Guidelines for Conducting Information Manpower Surveys by Nick Moore (2 vols., 1986) stated that "one of the crucial factors in the development of libraries, archives and information services is the availability of an adequate supply of appropriately trained staff. Ensuring that such staff are available in the right numbers represents a major challenge for those concerned with the development of effective services"(1).

The Sixth Session of UNESCO/PGI's Ad Hoc Committee on Education and Training Policy and Programme, held in January 1988, reinforced the commitment to professional development planning. The final report noted that "professionals, in their roles as changemakers, must be aware of the social impacts of change and must participate in and influence the direction of technological development"(2). The Ad Hoc Committee recommended that the UNESCO manpower survey guidelines be assessed by means of feedback from regions where they have been applied. Consequently, the FID/ET Seminar in Finland aimed to bring together the experience in manpower surveying and forecasting built up during the past decade in several areas of the world.

SEMINAR OBJECTIVES AND TOPICS

Initiated by Yves Courrier (UNESCO/PGI), who has been the liaison and principal mover for several national manpower studies, the seminar elicited contributions from educators, administrators and information scientists who had planned and implemented manpower surveys. The objectives of the seminar were to (a) build a conceptual and historical framework, (b) review the advantages of and problems involved in different processes, (c) identify experience with various methodologies, and (d) synthesize policy issues in order to invite comment and new suggestions on how to deal with them.

Throughout the formal presentations and extensive informal discussions, the superb hospitality and competence of the Local Organizing Committee headed by Sinikka Koskiala created a collegial and stimulating environment. Conducted at Helsinki University of Technology in Espoo, the program was organized by Marta Dosa, then Chair of FID/ET, with advice from Bimpe Aboyade (Nigeria), Yves Courrier (UNESCO), T. N. Rajan (India) and Thomas Seeger (Federal Republic of Germany). Attended by fifty-five specialists from twenty-two countries, the seminar considered such themes as the role of information workers in the context of national development;

the problem of standards and measurements for monitoring supply and demand; quantitative, qualitative and combined methodologies; and the search for the 'ideal profiles' for information, library or archives professionals.

Setting the context for the proceedings, the Opening Panel, chaired by Ritva Launo (Finland), Chair of the Congress Organizing Committee, included Yves Courrier (UNESCO); Michael Hill (UK), President of FID; Merja Karivalo, President, Finnish Society for Information Services; Stella Keenan, Executive Secretary of FID; Sinikka Koskiala, Local Organizer; Elin Tornudd, Professor and Director of the Helsinki University of Technology Library and President of the Intergovernmental Council of UNESCO/PGI; and Marta Dosa (FID/ET).

How may the value of this seminar be spread beyond the participants to those who were unable to attend? The answer always lies in the potential 'ripple effect' of each topic and each discussion. Personal networking after and beyond a seminar is a new way to expand its impact.

SESSION I: CONCEPTUAL PERSPECTIVES

Under the chairmanship of Sinikka Koskiala, two key papers provided a historical, policy-oriented and methodological context for the seminar. "Background and Evolution of Educational Planning and Forecasting for Information Manpower" by Yves Courrier stressed "the importance of hard data for planning for a future which is basically unknown" and of a clear conceptual understanding of manpower issues that guide the interpretation of data. A major concern was how to adapt educational requirements to the needs of a 'rapidly moving market'. The speaker stressed the inadequacy of manpower assessment procedures and the usefulness of considering qualitative and quantitative data in combination. The seminar papers should offer some new ideas for more effective data collection. An earlier, more comprehensive review of manpower studies by Y. Courrier was a useful reference point for background information (3).

A major contributor to formulating and conducting procedures for manpower surveys, Nick Moore (UK), discussed "Indicators for the Emerging Information Market". In view of the problem of defining this elusive market for the purposes of a survey, he indicated as feasible methods (a) a large-scale survey of employers and (b) analysis of job advertisements. The overview provided by the speaker of the advantages and disadvantages of each approach was enhanced by examples from UK and Singapore studies. These surveys identified a new market in terms of newly-created jobs which, in turn, represented new demands for education innovation.

SESSION II: THE INFORMATION LABOR MARKET
IN ECONOMICALLY DEVELOPING COUNTRIES

The term 'economically developing' was found to be a fairer description of countries with long and rich cultural histories, but short of economic and technological strength, than the term 'developing country'. Regional and country studies of the English-Speaking Caribbean, Thailand and Southern Africa were presented with reference to the development goals of each in this session chaired by Björn Tell (Sweden). "Information Scientists in the English-Speaking Caribbean: Challenges and Responses in the Development Process" by Gloria Greene and Reive Robb from Jamaica began with an excellent review of social and geopolitical trends affecting information needs and of the cultural profiles of countries participating in a survey that applied modified techniques of Nick Moore's 1981 pilot study in the same region. The authors described the variables that relate to manpower supply and demand and defined a very useful distinction between 'demand' and 'need'. The two Caribbean surveys provided a comparative perspective on manpower indicators, for example, vacancies in the information system and job mobility. Since, in this region, the demand for information personnel proved to be greater than the supply, education and training policies were challenged to develop a strong indigenous professional capacity through collaboration and networking.

A paper on the "National Survey on Manpower in Libraries, Information Centers and Archives in Thailand" by Suwakhon Phadungath (Thailand) from the National Library of Thailand was presented by Uthai Dhutiyabhodhi (Thailand) in the author's absence. Conducted from November 1987 to March 1988, the survey was designed to contribute to the implementation of the country's national information system. The analysis of data on trained personnel and their skills led to specific recommendations for more government attention to nationwide information personnel needs, more support by international organizations, and the formulation of national standards and policies.

J. R. Neill and D. M. Mbaakanyi (Botswana) offered a critical view of earlier forecasting studies conducted in the region in their report on "Predicting the Future: Manpower Forecasting for the Library and Information Professions in Southern Africa". Although the results of a recent project, designed for Southern, Central and Eastern Africa and sponsored by the Deutsche Stiftung für Internationale Entwicklung-DSE (German Foundation for International Development), reported here for the first time, are still preliminary, some interesting trends emerged. The authors recommended creating an evaluation model, carrying out more detailed analysis, and making regular surveys securing longitudinal indicators.

SESSION III: APPROACHES TO MANPOWER PLANNING
IN THE INFORMATION AND COMMUNICATION FIELDS

By identifying representative conceptual and policy issues educators face when planning, Toni Carbo Bearman (USA) introduced an analytical tone to the session. The themes represented not only technical but also theoretical and professional dimensions of the forecasting process. Should we apply forecasting results to planning? Are the methods reliable and credible? Is information a factor in progress? With such questions, the first speaker, Monique Jucquois-Delpierre (Federal Republic of Germany), approached the topic by critical searching and questioning in a paper on "Problems in Forecasting Manpower Needs". She posited that, on the one hand, we need facts because we must avoid wastage of human resources and expertise but, on the other, we have to question the validity of data in a field where both personnel and the nature of work are in flux. The author concluded that the forecasting process in itself represents a policy direction and that factual surveying and forecasting are necessary.

In some innovations of the survey method the assumptions, the problem formulation or the conceptualization of the variables are modified, while in others the computer applications used represent the innovative factor. The second type of innovation was characteristic of the Puerto Rican project, reported by Anthony Debons (USA), Mariano Maura-Sardo and Anne J. Thompson (Puerto Rico) in "Electronic Measures for Human Resource Research". Based on the survey model used at the University of Pittsburgh, questionnaires were sent electronically to universities, industry and government in six geographical areas in Puerto Rico. This paper generated much constructive discussion of the method even in the absence of the final results.

In "The Intersection of Communication and Information: Some Implications for Human Resources Forecasting" Royal D. Colle (USA) identified information dissemination as the process studied by both communication science and information science. In developing countries, the effectiveness of information dissemination is determined by cultural, as well as economic and social factors. We have experienced a growing demand for communication capabilities that make direct contributions to the development process and ultimately strengthen the national capacity for self-reliance. What kind of training is needed? The author recommended three steps: (a) explicit definitions and descriptions of communication systems, (b) identification of the skills necessary for planning and implementing and (c) determination of appropriate education and training. In communication science, surveys of skills carried out sector by sector proved to be an efficient approach.

SESSION IV: QUANTITATIVE METHODOLOGIES:
ISSUES AND APPLICATIONS

Chair Guy Garrison (USA) reminded the participants that the effectiveness of surveys depends on sound assumptions, design, and measurements, for example, quantifiable data describing the characteristics of a portion of the national workforce. Qualitative descriptions -- for example, the employers' perception of the desirable characteristics of information workers -- can greatly enhance the quantitative approach if both are based on clear definitions and an understanding of what should be measured and described. Another concern was the application of results. The papers in this session presented various ways of identifying manpower trends and using them for planning.

The British project, described by Christopher Turner and Felicity Bray from Brighton Polytechnic, in "Monitoring the Development of the Library and Information Workforce," used adapted techniques of the Moore-UNESCO guidelines for assessing changes in the British library and information workforce. The survey sought to coordinate procedures with the censuses carried out by the Department of Education and Science in 1972, 1976 and 1981. The data were analyzed by Nick Moore in 1984. The new survey intends to provide information on new developments and changes.

Sociological conceptualization of the information market underlies Gale Moore's paper on "The Information Professionals: A Study of an Emerging Industry". The survey identified 519 firms in Canada involved in information work; it displayed the large diversity of professional backgrounds, job titles and activities of their personnel. On the basis of preliminary data, the paper concludes that university-level education, including computer science, economics and branches of social science, is the best preparation for these heterogeneous information functions.

Mohamed Benjelloun (Morocco) projected information services and education into the larger scope of economic development in his paper "Enquetes sur la Main d'Oeuvre de Secteur Documentation: Cas de l'Experience Marocaine Enquete National sur le Personnel de l'Information". In Morocco, a national information policy has been guiding the planning of the documentation infrastructure. The School of Information Sciences (l'Ecole des Sciences de l'Information-l'ESI) has been the recipient of UNESCO support for its innovation process. The first step was the study of the economic-administrative environment of the information/documentation sector. The pilot inquiry into the institutional configuration and personnel, based on the standards of the UNESCO Guidelines, is described by the paper in detail, including definitions of statistical units, variables, instruments used and results.

The session closed with a brief informal report provided by H. R. Simon (Federal Republic of Germany) on training and career

oppurtunities in the area of librarianship, documentation and information science in the Federal Republic of Germany and Berlin (West). The report was presented by Thomas Seeger.

SESSION V: SURVEYS OF PROFESSIONALS AND EMPLOYMENT IN LIBRARIANSHIP

The presentation of case studies from Colombia, Israel and the United Kingdom, representing a combination of qualitative and quantitative methods, was chaired by Bimpe Aboyade (Nigeria).

In their paper "Professional Profile of the Librarian in Colombia," Martha Alicia Perez and Maria Clemencia Molina of the Library School at the University of Medellin described construction of the profile by a combination of methods. The set of attributes and qualifications derived from the description of employers and graduates constituted the 'Pragmatic Profile.' The 'Theoretical-Academic Profile,' on the other hand, represented the optimal attributes of the ideal librarian. The integration of these two profiles resulted in a 'Professional Profile' and in educational requirements for achieving it.

"A Survey of Hebrew University Graduates 1957-1984" by Bluma Peritz and Tamar Shagam surveyed 295 of a total of 660 graduates. Findings on the type of library workplace, tasks performed, full vs. part-time employment, and subject specialization were enhanced by the perception of the respondents on continuing education in computers and information retrieval (most felt a need for it) and on the future of special libraries (a growth may be expected). Information science was identified as a goal of curriculum innovation.

Surveys by Frances Wood (UK) of graduates of three Master's programs at the University of Sheffield's Department of Information Studies in her paper "Employment Patterns and Curriculum Development," demonstrated a wide variation in positions and a high level of mobility. Some curricular subjects declined, but computer applications increased in popularity. Although, according to the author, such surveys cannot predict all demand, results can chart trends and stimulate curriculum change, in this case the introduction of two new programs at Sheffield: an MSc in Information Management and an MBA in Information Management, the latter in conjunction with the School of Management and Economic Studies.

SESSION VI: METHODOLOGICAL ISSUES OF ASSESSING MANPOWER IN THE INFORMATION SCIENCES AND LIBRARIANSHIP

Since the objective of the seminar was to invite feedback from specialists who had been involved in manpower surveys and gained experience with a variety of levels, target populations and educational implications, most of the seminar papers emphasized methodology as a combination of conceptual considerations and

techniques. Iraset Paez-Urdaneta (Venezuela) chaired this session, bringing together two specialized papers from Brazil and Kenya and a historical overview from France.

"Use of the Delphi Method in Library and Information Science Curriculum Development and Revision in Developing Countries" described the planning of a new Master's degree program in librarianship and documentation, based on manpower need data collected through the Delphi reiteration technique. Written by Jaime Robredo, Tanja M. G. Botelho and A. R. E. Corte from Brazil, the paper delineated the role of the Library School at the University of Brasilia and its creative special study group in identifying priorities for the new curriculum. The authors emphasized the importance of professional leadership in maintaining a scholarly perspective when dealing with procedures and techniques.

Diane Barrat (France) brought to the seminar her understanding of and experience with the Centre d'Etudes et de Recherches sur les Qualifications (CEREQ), a French government body responsible for research and policy recommendations on educational and professional qualifications. Her paper, "An Historical Study of the Different Methods of Qualitative Analysis Used by the CEREQ for Studying Jobs in Information and Data Processing," suggested that job analysis and a typology of activities should be incorporated into a comprehensive professional development review. A comparison of official job profiles and actual information handling activities can identify changes that reflect innovation. More recently, an analysis of job mobility, recruitment practices and changes in the nature of jobs was initiated, resulting in a dynamic picture of job market trends.

Viewing information education in the national developmental context, Joseph Ojiambo (Kenya) recalled past failures to modernise library and information services in his country, but characterized the current national survey as a direction leading the profession 'to think strategically about manpower resources needed...' His paper, "Manpower Survey and Analysis for Library and Information Services in Kenya" focused on the two stages of the survey initiated by Moi University. The first stage, following Moore's model, included the scanning of job announcements in daily newspapers. The second stage collected data about library and information professionals from both employees and employers. The goal was to determine manpower and education needs at the national level and incorporate them in curriculum design.

SESSION VII: IMPLICATIONS FOR EDUCATION AND TRAINING

This session expanded the scope of the seminar to a paper dedicated to the manpower needs of archives and records management. Other papers, under the chairmanship of Marjatta Okko (Finland), covered a national survey and two specific approaches to change.

Molina S. Nijhar (Malaysia) gave an account of the results of the "Malaysian Manpower Survey of Libraries, Information Services and Archives, 1986". Using the Moore-UNESCO Guidelines, the study obtained national statistics about the workforce. Several recommendations were based on the survey; for example, the Mara Institute of Technology was advised to establish a Master's program, graduate more professionals, and offer continuing education courses in conjunction with the National Library of Malaysia and the Library Association of Malaysia. A need for diversification of the curriculum and for the introduction of new programs was also determined. A competitive job market in the future was foreseen.

Michael Cook (UK) was unable to present his paper in person because he was attending the conference of the International Council on Archives (ICA) in Paris at the same time. In the paper "Manpower and Training Needs in Archives and Records Management," read by Marjatta Okko (Finland), herself an authority on archives, the author stated that no manpower survey has been conducted in this field, although the need for proper management of archives and records is widely recognized.

To remedy the situation, ICA's Committee on Professional Training established a database directory of trainers and training schools in archival studies, which is being maintained at the Rijksarchiefschool in the Netherlands. The paper explained that the largest number of archivists is being recruited in Europe, the United States and Canada, but the need is perhaps more urgent in the Third World, where "a single individual could make a radical difference." Two significant policies and activities were also described: (a) the system of planned development of trainees and archivists for the developing regions, and (b) UNESCO's harmonization program. The latter has evolved a policy of balancing educational and training efforts in library, information and archive services by developing a separate (although similarly structured) curriculum for each and increasing cooperation among the three programs and institutional infrastructures.

A very interesting paper by José-Marie Griffiths (USA) generated much discussion on its topic -- 'Validation of Competencies.' The presentation was based on a major project with coauthor Donald W. King (USA) that delineated categories of information activity and the required competencies for each. Regrettably, the paper was not received for publication in the proceedings.

The session concluded with Björn Tell (Sweden) reading his specialized paper on 'Cataloguing Rules and Database Production:

Implications for Manpower Training in a Developing Country."[2] This descriptive case study of a project in Nicaragua concluded that developing countries are finding it more and more necessary to seek alternative ways of training. For example, in the practice and teaching of cataloguing and classification 'the strict adherence to the AACR2 [rules] and detailed classification schemes such as Dewey and UDC as qualifications for catalogers, hampers a creative development in the Third World countries.'

SEMINAR REVIEW AND CONCLUSIONS

It has become a tradition for the FID Education and Training Committee to follow up on Seminar papers in an Open Forum, providing an opportunity for concise statements on education programs and policies not represented by formal papers, and a synthesis of major seminar themes. One question that ran through the entire proceedings was how to translate the data collected in a manpower survey into national policy and educational planning. From survey to the planning board, from planning to curriculum design, from design to new education program, from program to evaluation research, from education and research to leadership -- this logical sequence of events is closely associated with abstract expectations. In reality, one step does not always lead to the anticipated next one.

Few of the seminar papers dealt with the larger, philosophical issues of forecasting or with the implications of surveys for national policies. As usual, a paper looking back at evolution also helps us anticipate at least a few trends in the future. Thus, Yves Courrier's opening address provided the contextual directions for the Open Forum, too.

Although space allows only an allusion to the discussion topics, we should note that each of them stimulated an intensive search for clarification and projected future significance. Statements were offered by Benjelloun (Morocco) on the meaning of established units of analysis in surveys and alternatives to the guidelines, Botelho (Brazil) on the importance of professional leadership qualities and strategies, Courrier (UNESCO) on synthesizing some of the feedback on the UNESCO guidelines, Moore (UK) on applications of the guidelines and a useful matrix for data collection (figure below), Nijhar (Malaysia) on curriculum innovation, and Okko (Finland) on the need for a sound critical approach and insistence on high quality data.

---

[2] See also: International Forum on Information and Documentation, V. 14, No. 1, 1988, pp. 22-27.

TASKS	NATIONAL AGGREGATES	REGIONAL/ INSTITUTIONAL	CURRICULUM DEVELOPMENT
CONTEXT			
INVENTORY			
FORECAST			
PLAN			
	QUANTITATIVE		QUALITATIVE

A TYPOLOGY OF WORKFORCE PLANNING

Nick Moore, 1988

Even though the above and following comments were brief, they were thoughtfully formulated and, in most cases, also made available in writing. Two main topics were explicated by Paez-Urdaneta (Venezuela): the generalist/specialist dichotomy in professional training, and the trend toward privatization in developing countries, which calls for greater entrepreneurial spirit in the information professions. Peritz (Israel) reminded the audience of the need for analytical skills and more emphasis on high standards, rather than on the number of surveys undertaken. Robredo (Brazil) discussed the role of demographic data in assessing education and training needs and the importance of reflection when there is a need to seek relationships among diverse phenomena. F. Wood (UK) observed that the ultimate goal of any manpower survey is the formulation of national policies. She doubted, however, that all surveyors are motivated by providing data for decision making. Publicity, promotion, and marketing can also lead people into survey-type activities.

A review of recurrent topics in the seminar papers resulted in the identification of major themes. The mentality and tradition of service, at the core of the professional ethos of information providers, have now been joined by the spirit of entrepreneurship.

Surveys in various parts of the world have shown the need for management and business skills. At the supply end, surveys of graduates indicated that a growing number of them work in non-library situations. Seminar participants agreed that philosophical considerations underlying surveys and forecasting are indispensable. Discontinuities in the professional culture, the impact of information technology, management and economics, and diversification in professional development programs necessitate a thoughtful and ethical, value-oriented climate in planning. In the case of each survey, the project director and team members should try to answer three sets of questions at the outset:

-- Why this survey? What is the goal? What are we doing with the survey results?
-- What problem are we going to solve? What population will we target?
-- How will data be collected and analyzed?

In the following, we shall summarize the key points in the comments and recommendations in regard to each of the themes. It should be emphasized that all participants offered comments in the general discussion, not only those whose names have already been mentioned because they had given more formal analyses, often in written form. The following statements represent, therefore, the seminar's collective outcome, rather than the opinion of the editor.

A. Manpower Survey Methodologies: UNESCO's Guidelines and Alternatives

The objective of applied research, including surveys, is to conduct an investigation of high quality, including problem formulation, data gathering, analysis, interpretation of results and dissemination to potential users. Assumptions and definitions should be standardized and clearly explained within each project. Conclusions are more effective if written in a form, depth and language appropriate for dissemination. Researchers should also identify gaps in the coverage and make recommendations for applications as well as further research.

The exposure to numerous papers reporting the use of the UNESCO Guidelines was excellent. Because each paper highlighted different advantages and disadvantages of using the Guidelines, several participants recommended that a formal synthesis should eventually be carried out. Nick Moore's matrix would provide an efficient framework. Overall, the UNESCO Guidelines were recognized as a very good model, but it was also observed that appliers need to adapt them to each project's particular goal, financial limitations and cultural context.

One must remember that adaptations, even drastic ones, in a model transferred from sources external to the society applying

them, do not necessarily reflect on the quality of the model (although in many cases they might). Adaptations are simply indispensable in the process of cross-cultural technology transfer.

Alternative methods were described by several speakers. If integrated according to the same matrix, these approaches could provide a basis for comparison across standardized categories of characteristics. The discussion concluded with the suggestion that UNESCO/PGI would render a significant service by publishing guidelines for qualitative data collection.

B. The Use of Surveys in Planning

Seminar participants rapidly formed a consensus about the main criterion of the usefulness of surveys. If a survey assists national planners and educational institutions in innovating education, the project was justified.

The following modes of use and dissemination of survey results were mentioned:

-- Submission to government agencies
-- Planning of human resources
-- Planning of financial resources
-- Planning of educational technology
-- Incorporation in curriculum revision plans
-- Dissemination in reports
-- Dissemination in scientific papers
-- Use as benchmark data for further surveys
-- Workshops for administrators and practitioners
-- International and regional conferences
-- Use in application for funding.

The experience of survey directors and coordinators contributed significantly to the depth and richness of the collective learning in the seminar. Several of them identified potential problem spots in conducting any kind of assessment and forecasting project. Examples encompassed the following caveats.

-- Quantitative data might be biased if the basic assumptions and the conceptualization of units to be measured are not carefully formulated.
-- If interpretation of the results and conclusions is not harmonized with the survey's objectives, the quality of the work will be diminished.
-- Analysis based on incomplete data can lead to misunderstandings and misconceptions.
-- Qualitative information without strong supportive evidence and clear language can be ambiguous.
-- Important indicators and predictors might be lost unless the analysis covers them systematically and the interpretation describes them following the same sequence.

Although the above points and many similar ones relate to methodology as much as to the presentation of the surveys' outcome, they are essential factors in the usefulness of entire projects. Only by assuring the integrity of both the conceptual foundations and the techniques will a survey attain credibility.

C. Leadership in the Information Professions

Just as the quality control of manpower studies is in the hands of the information professionals who plan and conduct them, so is the profession's response to the survey results. Throughout the seminar, participants heard about and discussed 'ideal' profiles of librarians, information scientists and managers, archivists and communication specialists. Descriptions of an 'ideal' set of qualities always imply criticism of the existing attributes of professionals. How can information professionals bridge the gap between 'what is' and 'what should be'?

A consensus emerged that, in all branches of the profession, information specialists must develop a leadership role in the change process. Attitudes toward information services and education programs should be proactive, rather than reactive. Libraries, information centers, archives, and other information handling organizations are agents of change. Change should be evolutionary and incremental in order to be sustainable. The responsibility for leadership extends beyond the boundaries of established professional branches; information practitioners and educators have an opportunity to play a meaningful role in today's society marked by rapid transformations.

Two trends were suggested as outstanding examples of professional leadership needs: the 'democratization of information,' a process that utilizes the available technology in order to optimize access to information by all people, whether they can pay for it or not, and 'privatization' that, in many countries, transfers some information services from subsidized environments to fee-for-service and cost recovery arrangements. These two trends are complementary rather than contradictory.

D. Information Education and National Planning

Participants agreed that the development of human resources for information infrastructures and education is a national policy issue that should be considered in the framework of national development plans. As a result of manpower studies, decisions have to be made concerning the economics and policies of implementation, but decisions on curriculum revision, continuing education and research cannot be made in a societal vacuum. Rather, they must be based on an understanding of information policies in the nation,

in the region and in the world. National information policies should support the education and training of an indigenous workforce, a goal underlying the initiation of many manpower assessments.

To reap the benefits of surveys, information professionals should exercise leadership in reaching national policy makers. At the same time, general public awareness of the utility of accessible information in the country should be raised. Use of the manpower study Guidelines may be followed up by use of the Guidelines on National Information Policy: Scope, Formulation and Implementation by UNESCO. It seems appropriate to demonstrate how well the two different guidelines reinforce each other. The information policy guidelines state that "...there is an increasing demand everywhere for information-related planners, therefore training programs in the planning of information systems should be instituted for suitably-qualified personnel"(4). It is clear that neither the survey and forecasting of professional workforce needs, nor the establishment of national information policies can be effectively carried out without the other. Thus this seminar, which devoted much time to the details of methodology and to the essentials of professional change, concluded with a broad vision of national policy planning.

Marta Dosa

REFERENCES

1. United Nations Educational, Scientific and Cultural Organization. Guidelines for conducting information manpower surveys. By N. Moore. Paris: UNESCO/PGI, 1986, 2 vols., (PGI-86/WS/3), v. 1, p. 1.

2. United Nations Educational, Scientific and Cultural Organization. Ad Hoc Committee on Education and Training Policy and Programme, Sixth Session, Paris, 18-22 January 1988, final report. Paris: UNESCO/PGI, 1988, (PGI/E. T. V1/4), p. 2).

3. Courrier, Yves. Prévisions quantitatives et qualitatives et formation des spécialistes de l'information documentaire. Libri, 38, No. 1,1988, 1-25.

4. United Nations Educational, Scientific and Cultural Organization. Guidelines on National Information Policy (Scope, Formulation and Implementation). By I. Wesley-Tanaskovic. Paris: UNESCO/PGI, 1985, (PGI-85/WS/14).

SESSION I

CONCEPTUAL PERSPECTIVES

24 August 1988

Chair: Sinikka KOSKIALA (Finland)

BACKGROUND AND EVOLUTION OF EDUCATIONAL PLANNING AND FORECASTING FOR INFORMATION MANPOWER

Yves COURRIER
General Information Programme
UNESCO
Paris, France

Introduction

The responsibility of educating future information professionals is certainly a very important and difficult one. It is important because we are moving towards the so-called information society; that is, a society where the major part of the productive activity is related to information. The availability of competent information professionals will be an essential element to support activities such as research, industrial development, education, decision-making, etc. It is difficult because in a period of economic crisis -- whether in developed or developing countries -- resources devoted to education are scarce and much sought after. It is also difficult because education is the basis for a long professional career, even if we consider the possibility of continuing education.

In other words, educators in the areas of archival work and library and information science have to make decisions now on a future which is basically unknown. Of course, this is neither new nor specific to this sector. What is new is the emergence of a concern to obtain hard data upon which to base one's decisions. and this concern has appeared both in developed and developing countries.

In this context, the organization by the International Federation for Information and Documentation of a seminar on information manpower forecasting arrives at the right moment in the sense that many studies have been carried out in various parts of the world using different methodologies. It has seemed opportune to bring together some of those involved in this type of activity in order to exchange experiences, methodologies, and results.

Indeed, if one goes back ten years, the number of studies available was negligible, whereas nowadays it is difficult to keep track of all the new publications.

The purpose of this presentation is not to describe this work, since this has been done elsewhere[1], but to elaborate on the context in which it was developed and to propose some issues which can provide a framework to better appreciate the results of these studies.

Adapting the education of information professionals to the needs of the market has been the concern of the educators throughout the whole history of education in this field. However, decisions were taken on the basis of opinions more than anything else. In a society which is more and more competitive, it has become necessary to base one's decision(s) on solid information.

It is clear that there are two issues at stake: how many information professionals should be educated for a given market, and what kind of work should they be trained for.

These two concerns led to various types of studies. It might be useful to provide first of all a sort of framework to describe them before discussing their advantages and limitations.

Quantitative studies are designed to obtain data on the present or future market in terms of positions and/or trained staff available. They can be divided into two groups:

a) studies concerned with the present situation and short-term forecasts (up to 5 years), or;
b) studies concerned with long-term forecasts (5 years or more).

It is important to note that quantitative studies are not concerned with the substance of training, only with numbers, which can be expressed in absolute numbers, percentages, rate of growth, etc....

Qualitative studies seek to obtain data on the work, the functions, the responsibilities, the job environment, and the profiles of present or future information professionals. The variety of factors that can be studied is almost endless. It is essential to examine carefully for each study, the research design, the object being investigated, the processing of the data and so on. For instance, distinctions can be made according to the methodologies used (surveys, questionnaires, interviews) and the sources consulted (e.g., employers, educators, specialists). The many combinations possible between methodologies employed and sources consulted make it impossible to provide an exhaustive list of all the types of studies; one can cite for instance, content analysis of job descriptions, in-depth interviews of employers and information users, competency analysis, delphi studies, needs assessment studies.

It is worth noting that some researchers have combined a quantitative approach with a qualitative one as a better way to describe a rapidly moving market.

Other criteria concerning the scope of the research may also be helpful in distinguishing among various contributions:

-- the levels of activities: clerical, technical or para-professional, professional or a combination of these three levels;
-- the parts of the market: the "traditional" market, the "emerging" market or both;
-- the geographical extension: local, national, regional, international;
-- the time frame: past, present and future more or less remote.

These distinctions are obvious, but they should be kept in mind. The results and the validity of a particular work should be estimated according to the scope, the methodology and the resources put into it and only comparable activities should be compared. Inferences from a study done in one country to the situation in another should also be carefully avoided, as political, economic, social and cultural factors intervene all the time.

It is possible now to examine the first question that is being raised in relation to manpower forecasting, that is: how many specialists should be educated?

Surprisingly, this point became a concern within the profession and with educators not so long ago. For instance, in the USA and the UK, a large demand in the sixties led to the rapid expansion of the training institutions. It is only when this demand started to shrink, in the late seventies, that the question was raised on how to balance offer and demand. Most of the time, in developing countries, schools were created more because of the strong will of some pioneers, than as a result of a detailed analysis of the needs. The needs of library personnel in the existing or planned institutions were clearly taken into account in the functioning or planning of educational institutions but the approach was not as systematic as it is now, in that the market was not studied as a whole.

The NATIS Conference[2] made very specific recommendations in this respect, but they were not immediately followed up, probably because of a lack of adequate resources.

Quantitative studies have been carried out at the national level, which have tried to forecast, for instance, the needs by sectors (e.g., agriculture, industry, services) by levels (primary, secondary, higher education) or for some professionals (teachers, doctors, engineers)[3]. But none were available concerning the information professions as such, since in most countries, archivists, librarians and information scientists make up such a small group that it does not appear in the statistical nomenclature designed at the national level. However, when the imbalance in our profession, between offer and demand began to show dramatic consequences, in the early eighties, the number of quantitative studies increased substantially thus giving a fairly

precise image of the workforce in some countries. The model designed by N. Moore for Unesco came out at about the same time.

It is important to stress once more, that within quantitative studies various approaches may be used. The UNESCO model, for instance, gives the image of the short-term market only. More sophisticated statistical techniques have to be used when one wants to make long-term forecasts on the basis of other indicators, such as population, economic growth, educational plans or requirements, etc....

The second concern -- what kind of education should be provided -- as opposed to the first one, has been a long standing one. In the past, some issues have raised very heated debates. Among the most important ones in the history of library and information science education, one can cite the following.

-- Which environment is preferable: the professional working environment or the University?

-- What is the preferable level of education: undergraduate or graduate?

-- What should the main components of the curriculum be? Is there a need for a core curriculum?

-- What is the optimal length of a programme?

-- Is it possible to prepare effectively for a wide range of positions and functions and -- at the same time -- satisfy highly specialized needs?

-- Which specialization is preferable, by function or by type of institution?

-- What is the best way to introduce information technology into the curriculum?

-- Should in-service training be part of the curriculum?

All these questions related to the objective and substance of professional education have received different answers according to regions or countries. Sometimes, within a country, a very diversified system is in existence, as in France, whereas other countries provide a more homogeneous picture, such as in the USA. Some trends have gained international recognition, for instance; that the University is probably a better environment than any other. But, in general, it must be acknowledged that the variety

of programs remain very large. In other words, issues related to professional education are still very actively debated and it leads one to wonder why it has not been possible to reach generally acceptable solutions.

Two immediate reasons come to mind: the lack of scientific evidence and the absence of adequate procedures for decision-making. The groups involved in the educational process are well known: the university, the administration, the students, the professions, the employers, and the public at large (as information users). The point is that each group has different opinions on each issue according to its value-system and its interests in the short and in the long-term. Each group supports its position on the basis of different elements: for instance, the employer is concerned with the immediate effectiveness of a newly recruited graduate, whereas a student is more concerned with the career prospect offered by a given type of education. Educational issues thus resulted very often in endless discussions or in compromises unsatisfactory for all. The need for indisputable evidence thus became stronger and stronger so that, at about the same time as quantitative data started to be used, various qualitative studies were conducted. This evolution is certainly a very interesting and useful one and is not specific to information education. It probably reflects a social demand which has two facets: on the one hand, education should be more relevant to the real needs of a society and, on the other, resources devoted to education should be used effectively as possible.

For the sake of clarity, the problems related to the use of quantitative data have been presented separately from those related to the use of qualitative data. And indeed, a large majority of the studies carried out so far considered only one side or the other of the issue. More recently, a trend has been emerging where both approaches should be used together or combined.

This new direction is faced with important methodological and operational difficulties. It is not easy to set up a research design that can bring to light data of two different natures. The resources necessary to obtain valuable results -- both human and financial -- are much more important.

It might thus be useful to illustrate with two examples how the combined use of qualitative and quantitative evidence brings in a quite different light.

One of the results which has appeared very clearly from some of the qualitative studies is the need for more and more specialized information professionals. The market requires people who need to be specialists in the field for which they provide services (eg. chemistry, electronic, etc.) as well as in the area of information services or system design. It has also been shown that often, the first area of competence is more important than the

second one. Does this imply that the profession should divide itself and split itself into two (or more) branches: generalist librarians on one side, and information specialists on the other? This debate has been a long standing one in which everyone has his say. But when one looks carefully at the data obtained in a specific country[4], one can see that the "emerging" market is still much smaller than the traditional one. Considering the size of the information profession and its share of the professional market in the society as a whole, it is doubtful that the creation of different bodies of information professionals would be a sensible solution. To examine the needs of some segments of the market is an important task, especially when these segments seem to have great potential. These needs may lead to the setting up of specialized curricula which would take carefully into account the requirements identified. However, one should bear in mind the relative importance of these segments before advocating the creation of a separate profession, or, more simply, of separate educational institutions. This can be properly done only when considering <u>together</u> qualitative and quantitative data. Highly specialized training is perfectly compatible with a wide, diversified, numerically strong but united profession.

The tremendous growth of information technologies and their use in traditional and new information services is another example. The introduction of computers into traditional libraries has been a very complex process: it has affected library work from the point of view of both functions performed and the institutional setting. For instance, the use of MARC tapes, of centralized processing centers such as Online Computer Library Catalog or OCLC, and of host computers for online searching has considerably modified the performance of cataloguing and reference work. But the exponential growth of information technologies has also created a large variety of new ways to deal with information which includes new needs, new organizations and new services. The design and implementation of information systems based on available technologies is no longer the monopoly of librarians: business or computer specialists and many other professionals are concerned by this task. But, on the other hand it is very risky to predict which, among the many potential applications of information technologies will evolve into viable services. For instance, computer assisted instruction (C.A.I.) seemed to have a very promising future until it was found that the human investments required to prepare good quality products was very high. It is therefore necessary, instead of relying on technological forecasts which prove later on to be too optimistic, to examine closely the social base of information services and how they are evolving. The combined use of quantitative and qualitative data give indications on how the existing institutions and functions are affected by new information technologies and how new institutions and services are created. These data should help to distinguish those changes which are superficial and are simply a matter of knowledge updating from

radical transformations which require new approaches or attitudes to be transferred during basic professional education.

Considering qualitative and quantitative data together might thus be an important discussion point during the course of this seminar.

Let us now examine some evaluation aspects of the research. When one wants to assess the various studies available, the quality of data obtained must be examined in the light of elements external to the research design. For instance, where the library profession is well organized and well established, such as is the case in the USA or the UK, a fairly precise picture of the size and the structure of the workforce can be drawn. It is not so difficult to bring together data on the number of positions in the various types of libraries, both occupied and vacant, on the characteristics of the working population in a given area and its likely evolution. It is mainly a matter of concern and resources. But the question remains on how to explore the emerging market. The variety in terminology, functions and job setting is so wide in many countries that the data obtained should be used with the utmost care. In fact, a study should define very clearly the area which is being investigated and the methodology used.

Qualitative studies are more difficult to design and their results are always open to discussion. For instance, content analysis of job openings seems to be a fashionable approach as it seems fairly straightforward. But it has severe limitations: it is limited, of course, to the jobs which are advertised, and in some countries, the majority of openings are not advertised. It is difficult to define clear boundaries for the study, i.e., which jobs should be included and which should be excluded. It gives and image of the immediate needs of the employers, and does not tell anything about the long range evolution of the needs. And, finally, it is subject to the methodological limits of all content analysis studies, that is the difficulties of establishing categories and interpreting the results obtained.

The definition of competencies has been designed to bring together all those involved in the services provided by the profession. As a consequence, the data obtained are not limited to the present time and to the perception of the employers. But it is a much more difficult consultation process which does not always end up with the wide acceptance one would hope for.

This brief account of a selected sample of methodologies has stressed the limitations more than the achievements, as the authors themselves will have an opportunity to present their studies and their results. This seminar will certainly provide an excellent opportunity to present problems and difficulties, to discuss traditional as well as innovative methods and to examine the pros and cons of each approach according to the results

obtained. Finally, new suggestions for a more effective approach to the issue of forecasting educational needs could also be a very valuable outcome of this meeting. Above all, it has to be borne in mind that on the one hand, whatever the amount and the quality of the data obtained, the future will always be unpredictable and, on the other, decisions on educational matters are so important that it is essential to bring together as much evidence as is available in order to avoid, to the extent that is possible, going in the wrong direction.

REFERENCES

1. COURRIER, Yves. Prévisions quantitatives et qualitatives et formation des spécialistes de l'information documentaire. Libri. 38 (1): pp. 1 - 25.

2. Intergovernmental Conference on the Planning of National Documentation, Library and Archives Infrastructures. Paris 23-27 September 1974. Final Report. Paris, UNESCO, 1975 (COM/MD/30).

3. MOORE, Nick. The Emerging Market for Librarians and Information Workers. London, The British Library, 1987.

4. YOUDI, R.V. and HINCHLIFFE, K., ed. Forecasting Skilled-Manpower Needs: the Experience of Eleven Countries. Paris, UNESCO, 1985.

INDICATORS FOR THE EMERGING INFORMATION MARKET

Nick MOORE
Department of Librarianship and Information Studies
City of Birmingham Polytechnic

Introduction

We live in a rapidly changing world. Social, economic and technological developments are creating information-rich societies and are producing an information-intensive approach to the management of organizations. These developments are placing new requirements on our information systems and services. One effect of this is the emergence of new types of jobs for information workers. Employers are creating new positions and they are looking for people with the right skills and aptitudes to fill the posts.

Our task is to anticipate these requirements and to respond appropriately. We must try to identify the new types of work and the new forms of job so that we can modify our recruitment and training programs accordingly. To do this we need to identify the size of the new employment market, adopting a quantitative approach. We also need to identify the characteristics of the jobs and the characteristics of people which employers are looking for in those they want to hire. This implies a qualitative approach to the matter.

The Problem

The problem with any research in this area is quite simply one of identifying which jobs to survey. Because the jobs are new there is seldom any framework which we can use for the analysis. (There will be no associated organized professional association, for example [D].) The jobs themselves may not even be based in an identifiable information unit within an organization. Furthermore, the individual postholders themselves will lack any corporate or group identity and will not automatically associate themselves with the group being surveyed.

The task of the researcher, therefore, is first to locate the jobs and the postholders and secondly, to begin surveying them.

The Solutions

One way to overcome the problem is to undertake a large-scale survey of employers. The best example of this is the work carried out by the team led by Anthony Debons (1981). The team based their

research on a massive survey of employers, identifying within the organization concerned, the workers whose jobs involved information-handling. The drawback with this type of research is that it is very expensive and time-consuming. In order to ensure full coverage, it is necessary to survey a large number of organizations and to consider a large number of jobs within those organizations.

A cheaper, more easily managed approach is to survey job advertisements. This approach was used in the USA by Ching-Chih Cheng, Susan Raskin, and Diane Tebbets/Cheng (Raskin and Tebbets, 1984). They looked at job advertisements in an attempt to assess the extent to which graduates of Simmons College matched the expectations of employers.

In the United Kingdom, Blaise Cronin used an analysis of job advertisements in an attempt to assess the extent to which library and information educational programs generally could be made more relevant to the needs of employers (Cronin, 1983). I have also used the technique on three occasions. The first was to identify the size and nature of the employment market for information professionals in Singapore (Moore, 1986). At much the same time I was working on a research project funded by the British Library to identify the emerging employment market for information workers in the U.K. (Moore, 1987). More recently, I have used an analysis of job advertisements as part of a market research study for a new Master's course in information management which we are developing in Birmingham (Moore, 1988).

Surveying Job Advertisements

The basic approach is simple. The aim is to identify all the relevant jobs which are advertised during a specified period. When we tackled the task we began by scanning all the advertising media -- newspapers, professional journals, the trade press, and so on. In each advertisement, we were looking for key words such as 'information', 'data', 'library', and so on.

Having scanned all the possible sources of advertisements for one month we were able to identify the key journals in which advertisements appeared. We found that, in the U.K., about 95% of relevant job advertisements appeared in just 5 journals. We then scanned these journals thoroughly during the survey period.

For each of the jobs identified we recorded basic details such as the name and address and type of employer, the experience required, the nature of the duties expected of the postholder and the salary offered. We also kept a copy of the advertisement itself. In this way, it was possible to build a database and to analyze the information collected to provide a general picture of what was going on.

We were also able to use the database as a sampling frame for a more detailed survey of the employment market. At various times, we have used postal questionnaires and interviews with employers and postholders to provide further information. In one survey, we did try writing for job details but, on this occasion, we found this information very difficult to analyze.

When we surveyed the employers we were trying to establish what sort of people they were looking for and, more particularly, whether or not they were actually able to appoint someone who came up to their expectations. We also asked them why they had advertised the position, whether it was a new post, and, if not, whether any changes had been made to the job specifications for this particular advertisement.

In the survey of postholders, we tried to identify their personal characteristics, focusing on their qualifications, skills, and experience. With this information, we were able to assess in a rather more objective way whether or not the postholders matched the expectations of employers. We were able to discover the reasons why individuals applied for particular jobs.

Advantages and Disadvantages

The main advantage with the use of job advertisements is quite simply that the process is easy and cheap. None of the projects in which I have been involved has required more than 50 days work and each has, I believe, produced a valuable and detailed picture of the employment market.

One of the reasons for this, is that the advertisements provide in a very condensed form nearly all the information which is required. They even frequently provide a name, address, and telephone number from which you can obtain further information. What is more, the surveys can be carried out at the moment when employers are most interested in that particular post and usually at a time when they have been giving explicit thought to their requirements and expectations. Similarly, surveys of employees or postholders can be carried out at a time when they are most highly motivated. Perhaps because of these reasons we have consistently obtained response rates of over 50% for all our postal surveys and we have received a very enthusiastic response in all the interviews we carried out.

The technique is good at identifying the latest trends in the employment market because it focuses on jobs which are being created and designed at this very moment. It is also possible to produce broad estimates of the overall size of the workforce by using turnover rates and a little creative guesswork. Finally, it is possible to get a useful impression of growth rates simply by identifying the proportion of the advertisements which are newly-created positions.

The main disadvantage of the techniques is, quite simply, that it excludes jobs which are not advertised. It is, therefore, biassed against categories of work which have low-turnover rates. It also fails to pick up positions which are filled by means other than advertising. This is less a problem in countries like the U.K., where there is a general tradition of filling posts by public advertisement. The technique, therefore, tends to bias results toward new jobs and those with high turnover. This may however not be a bad thing, if one is looking at the current and developing employment market.

Some Results

Using the technique in both the United Kingdom and Singapore we have found a remarkably common picture. In both countries there is an identifiable employment market for information professionals. Within that overall market, it is possible to identify three categories of work:

* Librarians and Information Officers

* Researchers and Information Analysts

* Information Systems Specialists

Librarians and Information Officers are relatively easy to identify. They assemble collections of information in anticipation of future use and they are usually concerned to bring information into the organization from outside. Having assembled the information collections, they use them to answer a large number of enquiries over the course of a year. In so doing, they provide services to a large number of users. In value-added terms, they add relatively small amount of value to large numbers of units of information or enquiries.

Researchers and Information Analysts, on the other hand, gather information in response to specific enquiries. Their task is frequently to combine information from outside the organization with that generated internally. Having gathered the information they are required to analyze, interpret, and, most of all, to understand the information before re-packaging it and presenting it to their users. They deal with a relatively small number if enquiries presented to them by a very small number of users. In this way they add large amounts of value in the course of answering a small number of enquiries.

Information Systems Specialists are different again. They are concerned with processing large quantities of data produced by the organization. They are inextricably involved with information technology and their particular role is to apply their understanding of information in the context of technological

systems. They also provide services to a very small number of clients and add value by processing very large numbers of bits of data.

In Singapore we found that the three groups were of roughly equal size. In the United Kingdom, in contrast, nearly 60% of the information professionals fell into the Librarians and Information Officers category; about 30% were Researchers and Information Analysts, while only 10% were Information Systems Specialists.

There are, however, signs that the position is changing quite rapidly in the UK. We looked at the relative growth rates as represented by the proportions of newly created jobs for Librarians and Information Officers had not existed prior to the advertisement. This was what we expected and is about normal in any relatively stable occupational group. The situation was very different for the other two categories where more than 50% of the jobs were newly created positions. This represents quite exceptional growth. For more than half the posts to have been created at the time of the advertisement is quite exceptional and, I feel, indicates without doubt the emergence of a new employment market. The challenge for us now is to develop the educational and training systems to meet the new demands of that market.

REFERENCES

1. CHENG, Ching-Chih, RASKIN, Susan, and TEBBETS, Diane. Products of Graduate Library and Information Science Schools; Untapped Resources? Education for Information. 2, 3 (1984): pp. 163-190.

2. CRONIN, Blaise. The Transition Years; New Initiatives in the Education of Professional Information Workers. London, Aslib, 1983.

3. DEBONS, Anthony, et. al. The Information Professional; Survey of an Emerging Field. New York, Dekker, 1981.

4. MOORE, Nick. The Emerging Markets for Librarians and Information Workers. Library and Information Research Report 56. London, The British Library, 1987.

5. MOORE, Nick. Information-Intensive Management; the Impact on the Employment Market for Information Professionals. Birmingham, Birmingham Polytechnic; London, Aslib, 1988.

SESSION II

THE INFORMATION LABOR MARKET IN ECONOMICALLY DEVELOPING COUNTRIES

24 August 1988

Chair: Björn TELL (Sweden)

INFORMATION SCIENTISTS IN THE ENGLISH-SPEAKING CARIBBEAN: CHALLENGES AND RESPONSES IN THE DEVELOPMENT PROCESS

Gloria GREENE and Reive ROBB
University of the West Indies Library
Mona, Kingston, Jamaica

Introduction

The focus of this paper is on the manpower needs in information systems in the English speaking Caribbean. It recognizes on the one hand that the growing complexity of social and economic planning has generated an increasing need for information. On the other hand, the persistence of inflation, balance of payments, and foreign exchange problems, unemployment and underemployment all have implications for sectoral planning. Increases in population, the expansion of educational institutions at all levels, rural development and community welfare lead naturally to a greater demand for library and information services. One of the problems is to establish a supply of relevant skills to satisfy the demand. In many respects the pool of actual or potential skilled manpower is dependent on the availability of financial resources and training facilities. Resource requirements of all kinds are constantly being redefined due to the upsurge in new information technologies which create new demands with the implications for the human resource capabilities. This in turn raises more specific questions:

> How do manpower needs of libraries and documentation centers relate to the role of information in the development process?
>
> To what extent does the demand for information scientists match the supply?
>
> Has the upsurge in new information technologies increased or reduced the imbalance between supply and demand?
>
> How effective and relevant are training programs in coping with human resource problems?
>
> Are the professional associations and networks sufficiently viable and responsive to the general and specific manpower issues? What strategies have they pursued and with what measure of success?

Before entering into the analysis of the issues, it is important to note some of the special features of the countries with which this study is concerned, in particular, the current state of their library, documentation, and data systems. In the first instance, the Caribbean may be identified in three geopolitical groupings which have embarked on cooperative ventures in information. As shown in Fig. 1, these groupings range from the most exclusive, the Organization of Eastern Caribbean States (OECS), to the most inclusive, the Caribbean Development and Co-operation Committee (CDCC). These countries range in size from those with a relatively large area like Guyana (83,000 sq. mi.) to relatively small islands like Montserrat (39.6 sq. mi.) and Bermuda (20.6 sq. mi.). Their populations also vary, from those like Cuba (9.7 million), Haiti (5.9 million), and the Dominican Republic (5.7 million), to St. Kitts-Nevis (49,000) and Montserrat (13,000).

In this study, the main focus is on the Caribbean Community or CARICOM grouping which is essentially the Caribbean Common Market with a total population of 5.5 million and a total land size of 258,000 sq. mi. With the exception of Montserrat, all the states in the CARICOM grouping, formerly ruled by Britain, have gained their political independence at various periods since 1962. Consequently, even the smallest of these territories is actively involved in the planning and management of its political and economic systems and in the negotiations for bilateral and multilateral aid.

Figure 1. Caribbean Cooperation Groupings
(as of September, 1983)

	OECS (1981)*	CARICOM (1973)+	CDCC (1975)++
British Virgin Islands			
Antigua/Barbuda	x@	x	x
Dominica	x	x	x
Grenada	x	x	x
Montserrat	x	x	x
St. Christopher/ Nevis	x	x	x
St. Lucia	x	x	x
St. Vincent/ Grenadines	x	x	x
Barbados		x	x
Belize		x	x
Guyana		x	x
Jamaica		x	x
The Bahamas		x	x
Trinidad and Tobago		x	x
Cuba			x
Dominican Republic			x
Haiti			x
Suriname			x
Netherlands Antilles			x
Bermuda			x

* Organization of Eastern Caribbean States (OECS)
+ Caribbean Community (CARICOM)
++ Caribbean Development and Cooperation Committee (CDCC)
@ An "x" in a cell indicates that the particular country belongs to one or more groupings. If a cell is not filled by an "x," then the country does not belong to a particular grouping.

Table 1: Vital Statistics

Country	Population	Area (Sq. Miles) Units	Estimated No. of Library
Antigua/Barbuda	76 000 ('81)	170.5	53
Bahamas	249 000 ('81)	5 386	111
Barbados	50 500 ('81)	166	65
Belize	160 000 ('83)	8 866	18
Bermuda	54 150	20.59	43
British Virgin Islands	14 340	80	3
Cuba	9 700 000 ('81)	44 178	
Dominica	83 000 ('80)	289.5	8
Dominican Republic	5 752 000 ('81)	48 442	192
Grenada	109 200 ('81)	133	9
Guyana	850 000 ('81)	83 000	53
Haiti	5 878 000 ('81)	10 714	122
Jamaica	2 160 900 ('81)	4 243.6	1 073
Montserrat	13 000 ('83)	39.6	4
Netherlands Antilles	243 000 ('81)	383	43
St. Kitts/Nevis	49 000 ('81)	104	9
St. Lucia	124 000 ('81)	238	21
St. Vincent/ Grenadines	109 928 ('78)	150	8
Suriname	352 041 ('80)	55 143	125
Trinidad/ Tobago	1 128 600 ('82)	1 980	141

While this is not uniquely a Caribbean dilemma, the proximity of the region to the USA and Canada and its trading associations with Europe through the European Economic Community -- Asian Caribbean and (EEC-ACP) linkage, extend also to the role and development of information gathering and dissemination. This means that innovations in information technologies developed or processed in the North are amenable to transfer and adaptation in the Caribbean. The general consequences of these advanced technologies will be to change patterns of employment and occupational classifications as well as life and work styles. With special reference to the information systems, it means the acquisition of new skills and profound changes in the education and training of information scientists.

Information Systems and the Development Process

It seems reasonable to assume that the development process in the Caribbean, as elsewhere in the Third World, should advance the well-being of the individual by reducing the levels of poverty, unemployment, and illiteracy. It also should ensure that there are opportunities for increasing the potential of human resources and technological capabilities to contribute to increasing levels of well-being. Information systems are critical components of the process of development in so far as they facilitate communication, and increase awareness of events and linkages across territorial boundaries. The current revolution in the techniques of communication (satellite, cable, fibre optics) has brought into sharp focus the vast disparity in the well-being of states in the international system. It has also demonstrated how the new technologies could make the gap even wider based largely on ability to afford the cost and use of these technologies. There are some positive indications that the leading decision making bodies in the region--CARICOM, Caribbean Development Bank (CDB), OECS, and CDCC-- have recognized the vital need for establishing new and strengthening existing computerized databases. Except in the cases of tourism and environment, regional information systems are functioning for the other designated priorities viz. agriculture, industry, energy, trade, socio-economic planning, banking, and finance. In the area of the environment, the United Nations Environment Programme (UNEP) has proposed the establishment of Caribbean Action Plan Information Network (CAPNET), a system for processing and disseminating environmental data with special reference to the marine sciences.

There are several regional information networks which currently operate computerized databases. Of special importance is the Caribbean Documentation Centre (CDC) which operates under the mandate of CDCC established since 1977. It functions as a subsidiary of the UN Economic Commission for Latin America and the Caribbean (UNECLAC). The Caribbean Documentation Centre concentrates on improving facilities for the collection and dissemination of information in the Caribbean and tends to focus on bibliographic requirements and documentation generally. CARISPLAN -- the Caribbean Information System for Economic and Social Planning -- was the first sector to be organized. CARISPLAN abstracts and Current Awareness Bulletins are services that are presently available. Other regional systems in operation or in process of being established include the Energy Information Network for the Caribbean by CDB and patterned after the Commonwealth Regional Renewable Energy Resource Information System (CRRERIS) in the Asia-Pacific region; CAGRIS, the Caribbean Information System for the Agricultural Sciences which will link the regional focal point, AGRINTER, with AGRIS, the international center; the Caribbean Energy Information System (CEIS) with the regional focal point being the Scientific Research Council in Jamaica; the Agricultural Information System (AIS) operated by the Association

for Caribbean Transformation (ACT); and CARICOM's plan for a Caribbean Trade Information System (CARTIS).

In addition, there are examples of national information networks, the most advanced of which is the National Libraries, Archives and Documentation Services (NACOLADS) in Jamaica. The role and performance of NACOLADS have been advanced as a model in a recent publication by the International Development Research Center (IDRC) Canada.[1] Similar systems such as the National Library Service of Barbados (NLS) and the National Library Information and Archives Service (NALIAS) for Trinidad and Tobago have more recently been established. In the smaller territories also, national information systems are at various stages of development with OECS Information Network (INFONET), a computerized database/current awareness bulletin for the OECS now in its second year. However, it is to be noted that more recent attempts at creating national and regional information networks have evolved out of a long and well-established process of collaboration, which, according to Jordan's review of Library cooperation in the West Indies,[2] dates back to 1948.

In spite of these developments there is as yet no established database industry in the Caribbean with data base providers and vendors operating in a clearly defined market. There is evidence that such an industry is likely to emerge in the near future. The advent of telematics in particular, will increase the need for local expertise to apply and ,modify the technology so as to dovetail present computerized databases with the newer information technologies. The question that occurs is whether the region can afford the cost of this technological advance. Although some countries like Guyana (bauxite), Jamaica (bauxite) and Trinidad and Tobago (oil), have mineral resources, the CARICOM region as a whole is highly dependent on agriculture and tourism. As a result, the development process is highly volatile and responsive to the vicissitudes of the international economy especially as a fairly large proportion of national income goes toward the repayment of the national debt.

Manpower Resources: Supply and Demand

While the supply and application of the new information technologies raise several questions involving management and absorption capabilities, there are prior issues related to manpower requirements for current and future growth in the information systems of the region. There are very few manpower studies which deal specifically with the information sector in the Caribbean.[3,4] However, a very useful model of manpower planning for the information sector was devised and tested by Nick Moore in a pilot study for the Caribbean (1981).[5] This model was subsequently applied in modified form in a survey by Greene and Robb (1985).[6] These two surveys provide extensive empirical data on manpower indicators for the Caribbean as a whole.

The major components of the Caribbean Information Manpower model (in Fig. 2) are inherent in supply and demand factors. On the supply side it is necessary to identify the pool of available resources from among those who are qualified to work in libraries. This pool comprises those who are actively employed in, and those who are actively seeking employment in, libraries and information systems. The total supply is therefore reflected in changes which occur through decreases and increases in the available number of library staff over prescribed periods of time.

Figure 2. Calculating the Recruitment and Training Needs

SUPPLY		DEMAND	
Active Supply in Year 1 (S_1)		Demand in Year 1 (D_1)	
Newly Trained Workers	(a)	Increase in Existing Units	(w)
plus		plus	
Re-entrants	(b)	Increases from New Units	(x)
plus		plus	
Wastage	(c)	External Decreases	(y)
minus		minus	
Absolute Loss	(d)	Internal Decreases	(z)
minus		minus	
Active Supply in Year 2 (S_2)	equals	Demand in Year 2 (D_2)	
		equals	
		Active Supply in Year Two	
		minus	
		Recruitment and Training Requirement	equals

Supply $S_2 = S_1 + a + b - c - d$ Demand $D_2 = D_1 + w + x - y - z$

The overall recruitment and training requirement = $D_2 - S_2$

Source: Nick MOORE -- Survey of Library... pp. 30-31.

There are some important variables which help to explain the causes of fluctuations over periods of time. The current staff, newly trained workers and those who re-enter the library system having had previous library experience or training increase

the pool of available resources and therefore the supply. Those trained professionals who move to other occupations (wastage) and others who leave through natural causes like retirement (absolute loss) decrease the supply. On the demand side, the variables relate to increases and decreases in the number of positions for library staff. In this context, it is necessary to make the distinction between demand and needs: "Demand for services is defined as a willingness and ability to pay for those services, while the concept of "needs" involves the stated objectives of an organization or community."[7] Increases in demand usually reflect expansion in the existing library or information units or the creation of new ones. Decreases are directly related to the reduction in the number of posts which may be due to several internal and external factors. Internal factors include increased productivity or the introduction of automation; external factors include the need to limit expenditure in the light of the overall economic situation.

Results from the two Caribbean Information surveys provide a comparative perspective on several manpower indicators: vacancies within the information system; job mobility among various categories of staff in the information system as well as 'absolute loss' of skilled personnel. Both surveys cover the Caribbean in its most inclusive sense, that is, the CDCC grouping. According to Table 2, there is a relatively high proportion of vacant posts throughout the region ranging (in the 1985 study) from 27 percent for professionals and 8 percent clerical. The major difference between the two surveys is that in 1981 the overall level of vacancies was 32 percent compared with 15 percent in 1985. The decline between the two periods is partly due to the actual implementation of new information programs in the intervening period. At the same time, the relatively high levels of vacancies are partly due to unattractive salaries, terms and conditions of services, as well as a general lack of prestige, real or perceived, attached to the profession.

The comparative situation on changes of jobs is presented in Table 3. Out of a total of 3774 library jobs identified in the region there was an actual turnover in 374 or approximately 10 percent. In the 1981 survey, the turnover of para-professionals (24 percent) was approximately one and a half times the professionals'(15 percent). According to the 1985 survey, the difference between the two (at 14% and 13% respectively) was not significant.

What is more is that when there was movement of library skills out of its country of origin shown in Table 4, it was much more likely to be a destination outside the region than to another country in the region. Whereas the 1981 study shows a fairly high level of migration of para-professionals, in the 1985 study, migration of all information skills, at under 2%, is relatively small.

Turning to the numbers of information specialists who left the library service altogether, Table 5 shows that the levels range from a high of 11% of para-professionals in 1981 to 4% in the same category in the 1985 study. For professionals in both studies the level remained under 3%. From the findings it may be concluded that job mobility does not diminish the supply in the same way as absolute loss caused by professionals leaving the system altogether. This has implications for future growth as well as for policies related to training and recruitment.

TABLE 2: Vacancies in Caribbean Library Systems, 1981 - 1985
(in percentages)

	Vacancies by Category of Staff	
Category of Staff	1981	1985
Professionals	44.3	(952) 27.2
Para-Professionals	15.4	(1982) 14.7
Clerical	11.2	(1162) 7.7
Total	31.7	14.9

$$\text{Vacancies \%} = \frac{\text{Number of Vacancies}}{\text{Current Supply (no. of Staff)}} \times 100$$

TABLE 3: Overall Patterns in Job Mobility Within and Outside The Caribbean, By Category of Staff
(percentages)

	Job Mobility	
Category of Staff	1981	1985
Professionals	14.8	13.4
Para-Professionals	23.6	14.1
Clerical	8.4	2.7
Total	13.2	10.0

$$\text{Overall Job Mobility \%} = \frac{\text{Total Job Change}}{\text{Current Supply}} \times 100$$

TABLE 4: Patterns in Job Mobility Within and Outside The Caribbean, By Category of Staff (percentages)

	Same Country		Caribbean		Out of Region	
	1981	1985	1981	1985	1981	1985
Category of Staff						
Professional	12.3	11.3	.003	.33	2.9	1.7
Para-Professional	23.2	12.7	.003	.003	10.7	1.3
Clerical	8.2	2.3	-	-	2.0	.003

Job Mobility % = [No. Changing Job in Same Country, C'bbean, and Out of Region] divided by [Current Supply (No. of Staff)] x 100

TABLE 5: Absolute Loss by Category of Staff (in percentages)

	Absolute Loss	
Category of Staff	1981	1985
Professional	2.8	2.2
Para-Professional	10.7	4.0
Clerical	2.0	2.5
Total	4.4	3.1

$$\text{Absolute Loss \%} = \frac{\text{Total Leaving Library Service}}{\text{Current Supply}} \times 100$$

Among the main factors creating new demand and growth paths for information scientists are the newer and emerging information technologies. At the time of the 1985 survey, the main advances in the Caribbean had been in compiling bibliographic databases for purposes of retrieval. However this has not yet stimulated wide creation of new information services and products. The operation and application of these databases remain, even today, limited to a relatively small number of information systems. Of the estimated 1573 library units in the CARICOM grouping (Table 1) less than 10% have introduced online computer systems and even less are currently in effective use. The reason for this is either lack of resources and/or expertise to deliver the service. In some cases it is felt that the first priority should be given to automating cataloguing systems and to gradually building databases to create viable local and international information exchange. At the same time there is growing awareness both in the public and private sectors of the greater efficiencies of the newer information technologies.

Knowledge of their increasing usage and impact in North America and Europe together with the region's close social, economic, and cultural contact with these centers, has created an important "push effect" and an effective demand for developing skills to use the new technology.

New Information Technologies

Among the newer technologies that have so far been introduced into the Caribbean are packet switching and teleconferencing. In the case of packet switching, the technique of using nodes in established networks is already being implemented by carriers such as JAMINTEL, regional carriers such as Cable & Wireless, TEXTEL and BATELCO, ATT and ITT and has proven to be a secure and speedy way of transmitting information. The cost of this service is based more on the quality of the information transfer than on time or distance.

Another technique that has been introduced into the region is computer-based messaging, which transmits information between computers via telecommunication links. One system that has developed (1984) in this area is the Agricultural Information System operated by the Association for Caribbean Transformation to support agricultural development and to provide technical support to producers, traders, and other decision-makers at all levels within the agricultural sector. AIS is a non-bibliographic facility which services nine Caribbean territories through the RBBS-PC bulletin board system. It has developed a pre-screening system which enables users to join at one or all of the levels of security which it has devised as follows:

* Read and write messages
* Download files
* Upload files
* View a conference
* Join a conference.

An extension of computer-based messaging for which AIS also has a facility is computer-based conferencing systems. This allows senders and recipients to communicate by computer in non-real time. As an information technique it promotes greater accuracy, better quality, and information transfers which would not have taken place with the traditional means only. In March, 1983, the University of the West Indies initiated a distance teaching experiment, UWIDITE, linking by telecommunications its campuses in Jamaica, Trinidad and Tobago and Barbados with extra-mural centers in Antigua, Dominica and St. Lucia. The use of this facility for university teaching across the region as well as for conferences will have important implications for the structure and organization of reading materials and hence the organization of library and documentation resources.

TABLE 6: Chart Showing Telecommunication Services Provided in the Caribbean Region, By Country

Services	Cuba	Barbados	Dominican Republic	Guyana	Jamaica	Trinidad/ Tobago
Telex	Yes	Yes	Yes	Yes	Yes	Yes
Int'l Direct Dial	Yes	Yes	Yes	No	Yes	Yes
Card-Oper'd Int'l Payphones	No	No	No	No	No	No
USA Direct	No	Yes	No	No	No	Yes
800 Service	No	Yes	No	No	No	Yes
900 Service	No	No	No	No	No	Yes
Expanded D'base Access Service	No	Yes	No	No	No	Yes
IBS Service	Yes	Yes	Yes	Yes	Yes	Yes
Expanded Bureau Service	Yes	Yes	Yes	Yes	Yes	Yes
Teleconferencing	Yes	Yes	No	No	Yes	Yes
Distance Teaching UWIDITE	No	Yes	No	No	Yes	Yes
E-mail	No	Yes	Yes	No	Yes	Yes
Enhanced Telex Services	No	Yes	Yes	Yes	Yes	Yes
Enhanced TV Services	No	Yes	Yes	No	Yes	Yes
Enhanced Data Services	No	Yes	Yes	No	No	Yes
Maritime services	Yes	Yes	Yes	No	Yes	Yes
Bureau Facsimile Service	Yes	Yes	Yes	Yes	Yes	Yes

Source: GUMBS, Barbara and Angela PORTER. Potential for the Development of Data Services in the Caribbean. p. 4.

More general developments have occurred since the completion of the 1985 'Manpower' Survey that are likely to facilitate the use of these new technologies. Table 6 shows the extent to which information transfer facilities are becoming increasingly available in the region. The telephone lines have now become a link to instant information and data communications. There is a steady conversion from analogue to digital communication. In Jamaica, services now available through this new use of telephone lines include facsimile transmission. JAMINTEL's IDAS system links local computer users with foreign counterparts and an electronic mail service. In Barbados, the University of the West Indies Library uses the facilities of Cable & Wireless to access OCLC and DIALOG. UNECLAC is linked online to local centers in Trinidad and Tobago. In Guyana, the Institute of Applied Science and Technology has moved toward the establishment of international online links to the U.S.A.

The aim is to make use of online database services for published information in order to facilitate research and to offer a local service to scientific institutions which need to make use of such services. International linkages over satellite, submarine cables, microwave and VHF/UHF are facilitated by a few local carriers and mainly by privately owned and controlled operations. Already, however, constraints are being manifested, the primary one being the difficulty of the CARICOM grouping to communicate effectively among units in the region. Assuming that CARICOM is able to launch the Caribbean Trade Information System (CARTIS), there will be a major difficulty in operating the system from Guyana which is the location of the regional Secretariat.

Collins aptly describes the impediments to the efficient operation of the system. She states:

> There are exiting constraints in the developing of regional networks with Guyana as the coordinating center. The telecommunication link between Guyana and Trinidad and Tobago is by Tropospheric Scatter,over which the quality of the data cannot always be guaranteed, although a test has been successfully executed of data transmission at 9600 bps. The alternative route into the region is via a direct channel to the U.S.A. and then down through the Caribbean, at an estimated cost in the vicinity of U.S. $3,000 per month, consisting of Comsat and Intelsat charges and U.S. line charges. However the lack of a regional data sharing facility means that the problem of access will only be partially solved through the use of the U.S. route.[8]

As the telecommunications industry develops, the challenge is to establish a cost-effective system for the region as a whole and to embark on training and research programmes. In this regard, the Caribbean Association of National Communication Organizations (CANTO) has been building a computerized database on equipment, supplies, and services.

These new information technologies, therefore, continue to revolutionize the form and delivery of information to a cross - section of users in the Caribbean. Greater emphasis is gradually being placed on microforms, facsimile, end-user access to information, demand for acquiring text of documents instead of mere citations.

Education and Training

One way of improving the manpower supply is by ensuring that there are training opportunities for upgrading library professional and technical skills in the region. Training has always been an important aspect of librarianship since the early days of providing training through the prevailing British pattern of pre-professional recruitment followed by in-service study for the examinations of the Library Association leading to the Associateship (ALA) or Fellowship (FLA). In 1971, the Department of Library Studies of the University of the West Indies was established. It offers undergraduate as well as postgraduate degrees. In addition, several librarians pursue masters degrees abroad. Para-professional training for library technicians is being offered in community colleges throughout the region, a development being spearheaded by the Library Associations. Continuing education activities are constantly being promoted in the region as well as internationally. All this has led to the development of a cadre of professional librarians with a high level of training including some level of computer literacy.

Using the data from the Caribbean Information Manpower surveys it is clear that recruitment policies and training needs are interrelated, and together reflect the rates of growth in the information systems. The patterns of each tend to be determined by more specific factors, like the types of demand generated by new programs or techniques, or by the gaps in the supply of a particular kind of manpower resource due to 'wastage' or 'job change'. While some changes have occurred in the period since the 1985 survey, indications are that there have been no major divergences from the trends. Table 7 compares the projected recruitment and training needs in the 1981 and 1985 surveys. The percentages are derived from the relationships between the current and the projected five year needs on the one hand, and the current and short-term demand on the other hand. There are no substantial differences between the two studies except that, for professionals, the 'current needs' in the 1985 study (50% of demand) are approximately 18% lower than the recruitment and training needs in

the 1981 study. For para-professionals, the 'current' recruitment and training needs are approximately the same (55%-56%). A similar short-term trend emerges for this category of staff where the needs vary between 70%-75%. For the professionals, the short-term projections are 70% for the 1981 study and 68% for the 1985 study. What this means is that in the three years (1981-84), intervening between the two studies, the training programmes have made only marginal impact in satisfying the needs for trained library personnel. Unless the possibilities for training professionals and para-professionals are increased rapidly, the projections for the next five years indicate that 'demand' will continue to outstrip 'supply'.

At the time the two surveys were being carried out the Dominican Republic to a much greater extent than any of the other countries had included in its 'future growth' the need for information scientists with special skills for handling the newer information technologies. Consequently, in examining the recruitment and training needs for the Caribbean excluding the Dominican Republic, the point to note is that in our view these data somewhat underestimate the training needs based on 'future growth'. Even so, Table 8, which summarizes gross data (given in Table 9) shows that requirements for the other countries remain relatively high. Among these are: Guyana and Suriname, where the requirement for professionals in 1985, was over 100% and again, 57% per annum for Guyana in the short-term; Jamaica's requirement for professionals was 58% and 34% per annum for para-professionals in the short-term. For Trinidad and Tobago, the current requirement for professionals is 35%, in the short-term appreciably less (11%); while Bermuda's short-term requirement was 50%. In Antigua, Dominica, Grenada, St. Kitts-Nevis, and Belize, there was a range between 33% and 50% per annum in the short-term for professional and/or para-professional staff. Given the comparable high rate of vacancies identified for the respective categories of staff in these countries, it is reasonable to assume that their requirements may be largely met by appropriate training programmes linked to a policy of recruitment. In this context also, it is to be noted that plans for the expansion of services, especially in Jamaica, Antigua, Grenada, the Bahamas, Belize, and the Netherlands Antilles were partly responsible for increases in the requirements between the 1981-1984 period and the five year (1984-1988) period and ranged from 33% (in Jamaica) to 60% (in the Bahamas).

TABLE 7: Current and Short-Term Recruitment and Training Needs, By Category of Staff (percentages)

	Recruitment and Training Needs			
	Current		Short-Term	
Category of Staff	1981	1985	1981	1985
Professional	67.8	50.4	70.0	68.2
Para-Professional	54.9	56.3	74.5	69.5
Clerical	24.7	23.8	34.7	44.6

TABLE 8: Current and Short-Term Recruitment and Training Needs, By Category of Staff (percentages), Excluding the Dominican Republic

	Future Growth			
	Current		Short-Term	
Category of Staff	1981	1985	1981	1985
Professional	24.2	19.9	28.5	22.6
Para-Professional	20.6	24.3	18.2	11.4
Clerical	4.6	3.9	7.6	5.4

$$\text{Current R\&T Needs \%} = \frac{\text{Current Demand - Current Supply}}{\text{Projected Supply}} \times 100$$

$$\text{Short-Term R\&T Needs \%} = \frac{\text{Short-Term Demand - Short-Term Supply}}{\text{Projected Supply}} \times 100$$

Overall trends for recruitment and training needs are useful only in so far as they help to put into context the more specific requirements for the respective sectors that comprise the 1985 survey. Focussing on the different types of libraries (Table 9), it is significant that of all the sectors in the survey the current needs of the archives are by far the highest. This is followed by college, public, and national libraries whose current requirements exceed 100% of their present supply of professional staff. For para-professionals the highest need is recorded for university libraries (140%), followed by college libraries (129%), and public libraries (94%). By comparison, the high school libraries currently need approximately an additional 36% of their present professional staff, while the special and national

libraries and the archives need a little over 1/3 of their present staff to satisfy their current demand. Turning to what in 1985 was projected for the immediate fiver year period (1985-1990), the need of the national libraries for professionals was highest (over 100%), while for university, college, and public libraries, it was approximately 2/3 of current professional staff. With respect to para-professionals, the most notable need is among university libraries (57%). Special libraries (48%) and public libraries (47%) also have relatively high recruitment and training needs. It must again be pointed out that the very high rates indicated by the Dominican Republic have definitely skewed the data. When the Dominican Republic is excluded, the present rate of growth for professionals in university libraries, for example, will only slightly exceed the demand in the overall sample. The need for para-professionals is approximately 6% per annum. Of the other countries, only Guyana and Suriname projected any significantly high needs. Their respective requirements are 19% and 27% per annum for professionals and 11% and 14% for para-professionals.

TABLE 9: Current and Short-Term Recruitment and Training Needs, By Types of Libraries*

Types of Libraries	Recruitment and Training Needs			
	Professional		Para-Professional	
	Current 1984	Short-Term 1984-88 (per year)	Current 1984	Short-Term 1984-88 (per year)
Public	107.2	60.0	94.3	47.2
University	78.2	65.5	140.2	212.4
Elementary	94.7	32.5	61.6	26.6
High	36.6	10.3	53.6	21.1
College	111.1	62.9	129.0	56.3
Special	53.7	24.1	40.1	48.1
National	100.0	134.7	35.8	23.8
Archives	239.2	58.2	39.0	22.5
Total	80.8	40.7	75.1	43.1

* This table is compiled from gross data in Statistical Section in: GREENE AND ROBB, Information Manpower Survey, Part II, 1985, Tables 1.4.1 and 1.5.1.

For the CARICOM grouping the main training institution for professional librarians and documentalists is at the Department of Library Studies, University of the West Indies (Mona) which offers programmes leading to the Diploma and Bachelor degrees in Library Studies.

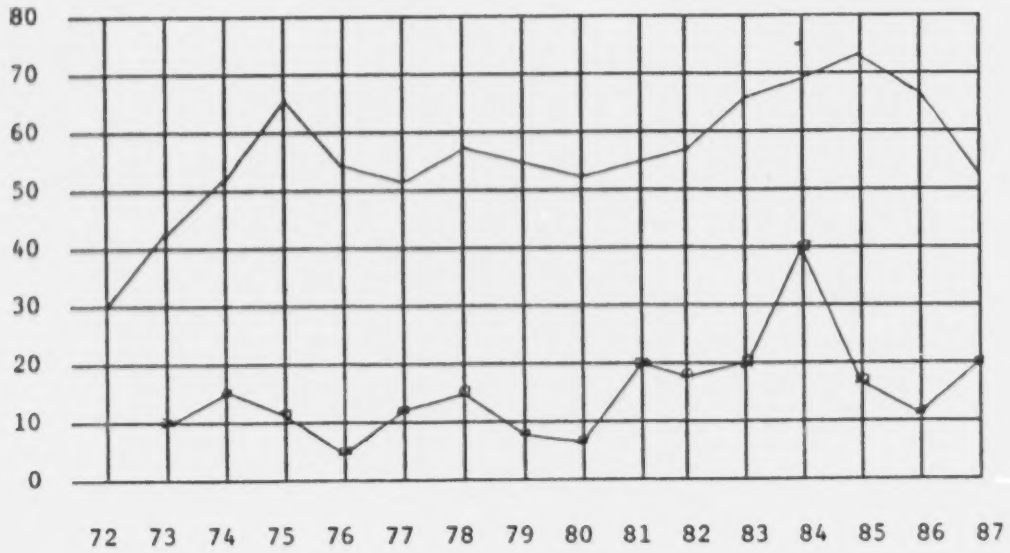
Table 10 provides the distribution of graduates by country of origin between October, 1971, when the Department began and the end of the 1986/87 academic year. Over the fourteen year period 1973-1987, 359 students have graduated, 219 of whom with undergraduate degrees, and 140 with post-graduate diplomas. The largest number, approximately 55%, is Jamaican in origin. Yet, with the exception of post-graduates (one) for the OECS countries, the territorial distribution of graduates is comparable in ration to the library units for each territory given in Table 1.

TABLE 10: No. of Graduates From the Department of Library Studies, UWI, By Country of Origin (1973 - 1987)

	B.A.	Diploma	Total
Barbados	9	12	21
Guyana	20	12	32
Jamaica	144	57	201
OECS	20	1	21
Trinidad & Tobago	20	51	71
Others*	6	7	13
Total	219	140	359

* Including Bahamas, Belize, Turks & Caicos, British Virgin Islands, and Aruba

FIGURE 3: Patterns of Enrollment, Dept. of Library Studies, 1973 - 1986



For comparison also, the overall pattern of enrollment is given in Fig. 3. While there is no discrete trend, it is clear that there have been incremental increases in undergraduate enrollments and greater fluctuations in postgraduate enrollments, with a peak in 1984/85, and a relatively sharp drop thereafter. No clear inferences are being drawn from these patterns, except that it may be evidence of the need for restructuring the undergraduate, particularly the postgraduate program, in response to the changing emphasis in the field of information.

At the same time, when the survey was done for the 1985 Caribbean Information Manpower study, the respondents identified abstracting and indexing, automation, audio-visual, and non-book materials as the main areas for improving training needs. Based on more recent follow-up interviews with a cross-section of the respondents in the 1985 survey, it appears as if automation has since emerged as the greatest need. Since 1985, the Department of Library Studies has attempted to respond to this need with the inclusion of courses such as "Automation in Libraries", and "Audiovisual Librarianship". However, lack of adequate infrastructure (hardware and software), and an inability to attract information scientists with the required skills, have been impediments to expanding the curriculum to include training in the newer information technologies. Relatively low and uncompetitive salary scales within the University are perhaps among the main reasons why information scientists with relevant technical skills

to mount sustained programmes in information technology are not attracted to the Department of Library Studies. Professionals who come as Technical Assistance from various institutions in the North on short-term assignments only temporarily alleviate, rather than solve, the problem.

Under these circumstances the Department of Library Studies has concentrated on training 'generalists' with some specializations. According to Professor Daphne Douglas, Head of the Department, by adopting this approach, the Department produces a cadre of librarians capable of working in specialist areas relevant to their environment, but who are basically 'all-rounders'. However, the Department embarks on short courses on an ad hoc basis, which assist professionals to upgrade skills specifically in the area of microcomputer applications in libraries and information management. In this respect, short courses and seminars are frequently sponsored by national, regional, and international organizations. They provide opportunities for a relatively wide cross-section of librarians and documentalists in the region to acquire hands-on experience in the newer technologies. These skills, however, will be further strengthened if a greater attempt is made to systematize the training required in modules/short courses. This may be done by the Department of Library Studies in collaboration with one or more of the agencies as part of its Diploma or proposed Masters programmes. In order to avoid the perennial problem of scarce resources, greater emphasis may have to be placed on new and less orthodox training through networking and collaboration with specialist agencies wherein the technical expertise in the newer information technologies is located in the region.

Development Through Networks

Already, the strategy of training through networking and collaboration has demonstrated how scarce resources may be rationalized through sharing. Some contemporary examples of this strategy can be seen in the activities of UNECLAC, CARICOM and STIN (Jamaica), the National Scientific and Technical Information Network. UNECLAC has provided training in abstracting and indexing; training in the use of hardware and software systems required for the development of regional information systems and national focal points, especially in the use of CDS/ISIS, both to information personnel and users of the software; training in the development of national focal points and national information systems; and, training in the use of the systems methodologies both at the regional and national levels. CARICOM has provided training in the hardware and software to be used in its CARTIS network and also for the design of the quantitative database. STIN, with external funding and some resources from the Scientific Research Council (Jamaica), has been active in promoting training in the newer technologies especially in the area of science and technology. Courses have been held in repacking techniques,

abstracting and indexing, use of CDS/ISIS hardware and software. With the Scientific Research Council now operating as the focal point for the regional Caribbean Energy Information System (CEIS), further training will be provided in online services and bibliographic and numeric databases.

In addition to the strategies for training, Fig. 4 gives a picture of how the priorities in planning established by CARICOM for the region relate to the range of information activity associated with these priorities and the networks which coordinate these activities. It also shows the state of the art for the region as a whole viz. what information systems are actually in operation and what have been proposed. Given the expertise within these networks, it is possible to generate a greater pool of resources (supply) to respond to the information needs. In other words, the strategy of networking is more likely to change the image of libraries as the prerequisite of the intellectual pursuing obscure theory. The Caribbean Information Manpower Survey (1985) confirmed the opinion by Rosemary Kavanagh, that "the library is not seen as a progressive system providing prompt information on the newest up-to-date technology or on the process for feeding and clothing our peoples, or creating the kind of information resources needed to train people in the requisite skills for satisfying goals".

FIGURE 4: Existing and Recommended Networks of Regional Information Systems

CARICOM Groupings

SECTOR	TYPE OF DATA+						NETWORKS
	Biblio	Text	Quant	Repack	Mass Media	Links	
All	est	est	prop	prop	prop	prop	CARSTIN
Agri.	est	est					CAGRIS
	est						CARDILS
	est	est	prop	prop	prop	prop	FISHER-IES*
			est	prop	prop	prop	PROMIS*
			est	est	est	est	CAMIS
			est	prop	prop	prop	ACT
Trade	est	est	est	prop	prop	prop	CARTIS
			est				CBIN
Socio-Economic	est	est	prop	prop	prop	prop	CARIS-PLAN
Indus.	est	est			prop	prop	CARPIN
		est			prop	prop	CARS-TIN++
Energy	est	est	est	est	prop	prop	CEIS
Bank'g/ Finance		est					ECCB
Health			prop	prop	prop	prop	CARICOM/ PAHO
			est				CAREC
Disas'r Preparedness	prop	prop	prop	prop	est	est	DPP
Law	prop	prop					REGIONAL LAW
	prop	prop					MARINE LAW
OECS (all sectors)	est	est					INFONET

\+ est = established; prop = proposed
++ CARSTIN TECHNOLOGY TRANSFER SUPPORT/SMALL SCALE INDUSTRY SYSTEM
Source: Adapted from: Fay DURRANT. A Regional Information System: Strategy for the Caribbean to the Year 2000. UNECLAC, 1987.[9]

One issue that must be addressed is how to change this image of libraries and librarians. It is here being suggested that emphasis should be placed on adequate training programs and creative networking. This will enhance not only the supply of information scientists but also the ability to draw upon a pool of expertise capable of applying and innovating in the appropriate transfers of the new information technologies.

Conclusion

What has emerged in this paper is the fact that there continues to be an inadequate supply of information scientists in relation to demand. This situation is likely to persist in spite of the pivotal role of information in the development process. The revolution in information technology has contributed even further to the widening of the gap between the supply of, and the demand for, information scientists in the Caribbean. Two main solutions were suggested to alleviate this problem. First, implement policies to enhance the image of the profession by making salaries and conditions of service more attractive. Second, strengthen the capabilities of the information training institutions in the region. In this regard, the status of the Department of Library Studies at U.W.I. should be changed to a professional school. This, it is argued, will give its programs more flexibility, making it more responsive to networking and collaboration among specialized agencies and professionals with expertise in the various information technologies. Especially given the trends toward adaptation of the newer information technologies identified in this study, training programs should place emphasis on combinations such as librarianship and science, or computing, or research and development, in information science and technology.

Donor agencies, particularly IDRC, OAS, and UNESCO, have contributed significantly to the increasing numbers of trained staff at all levels, especially in the introduction and use of the newer technologies in the region. With the continued support and rationalization of the aid programmes of these agencies, the Caribbean has a better chance than most Third World countries to effectively advance and increase the skills and resources for the successful use of these technologies.

At the same time, strategies for implementing the new information technologies in the region have led to concerns about 'electronic colonialism' described as the process in which the integration of the New World into the global economic system is facilitated by a global information system based on satellites, cables, fiber-optics, and computers. Such a flow of information could lead to the creation of a global culture supportive of the dominant cultures of the world. It is therefore, vitally important for the Caribbean to develop a regional indigenous training and professional capacity.

REFERENCES

1. INTERNATIONAL DEVELOPMENT RESEARCH CENTER. With Our Hands; Research for Third World Development; Canada's Contribution through the International Development Research Center, 1970-75. Ottawa, Ontario, IDRC, 1986: pp. 143-155.

2. JORDAN, Alma. "Library Cooperation in the West Indies," Libri. 23, 1 (1973): p. 18.

3. COLLINS, Carol. Existing Facilities for Meeting Information Needs of Planners and Policy Makers in the CARICOM Member States. Proceedings of a UNECLAC Meeting for Librarians and Documentalists, Port-of-Spain, 22nd Nov.- 2nd Dec., 1977. Port-of-Spain, Trinidad, UNECLAC: pp. 69-86.

4. BENNETT, Hazel, J. COVER, and K. MUNGO. Manpower Survey in Selected Caribbean Countries. Kingston, Jamaica, Department of Library Studies/OAS, 1983.

5. MOORE, Nick. Survey of Library and Information Manpower Needs in the Caribbean. Paris, UNESCO, 1982.

6. GREENE, Gloria and Reive ROBB. Second Survey of Library and Information Manpower Needs in the Caribbean. Parts I and II. Paris, UNESCO, 1985. Part I, 84 p.; Part II, 152 p.

7. COOPER, Michael D. An Analysis of the Demand for Librarians. Library Quarterly. 45 (October, 1975): pp. 375-404.

8. COLLINS, Carol. CARICOM Information Systems Projects and Regional Data Communication Needs. Proceedings of a UWIDITE/IDRC Workshop on Computer-Based Communication for Caribbean Development, March 28-30, 1988, Mona, Jamaica. 6 p.

9. DURRANT, Fay. A Regional Information System Strategy for the Caribbean to the Year 2000. Port-of-Spain, Trinidad, UNECLAC, 1987. 117 pp.

10. KAVANAGH, Rosemary. Information Management in Progressive Jamaica. Jamaica Journal. 11 (3 and 4) 1978: pp. 44-49.

NATIONAL SURVEY ON MANPOWER IN LIBRARIES, INFORMATION CENTERS, AND ARCHIVES IN THAILAND

Suwakhon PHADUNGATH
Fine Arts Department, National Library of Thailand
Bangkok, Thailand

Introduction

One crucial factor for the development and implementation of the national information system of the country is to develop and expand library, information/documentation services, and archive services throughout the country. To develop trained and qualified personnel is another important factor. There are now about 52 institutions which offer library and information science programs. These institutions have produced a number of qualified personnel each year. It is unclear how many and what levels or types of personnel are needed each year because there is no national survey on manpower in this field. The National Library of Thailand with the generous financial assistance from UNESCO conducted the National Survey on Manpower in Libraries, Information Centers, and Archives in Thailand during November 1987 -- March 1988. This national survey on manpower will illustrate the portion of the workforce in the library and information sectors, as part of the entire country workforce. The result of the survey will help in the analysis of the demand and supply and training programs for the country workforce.

Four main objectives of the National Survey are:

1) to collect data on available trained personnel in libraries, information centers, and archives in Thailand and to get the range of skills and attributes which they possess

2) to collect, analyze, and understand information about the current state of the workforce, its development, and the future balance between the demand for and the supply of the manpower in libraries, information centers, and archives in Thailand

3) to get information on trends in trained personnel production to prepare forecasts about the levels of supply and demand of the country's workforce to determine what action is required to achieve a balance between supply and demand in the development of manpower

4) to use the results of the survey and forecast as input during implementation of the National Information System of Thailand

The survey was conducted from 26 November 1987 to 31 March 1988.

Eight types of libraries, information centers and archives were selected for the survey:

1. Public Libraries
2. National Libraries
3. University Libraries
4. College Libraries
5. School Libraries
6. National Libraries
7. Information/Documentation Centers
8. Training Institutions

Survey Methodology

A nine step plan was designed and followed to complete survey and analyze the results.

1. Establish the mailing list by getting the list of institutes from various departments within the Ministry of Education and other offices. Institutes include: Teacher Education Department, General Education Department, Non-Formal Education Department, Vocational Department, the Institute of Technology and Vocational Education, Private Education Commission Office, The National Primary Education Commission Office, Ministry of University Affairs, and Thai Library Association.

2. Set up the working group and brief the working group about the objectives, procedures, and instructions of the survey.

3. Translate the manual and the questionnaire in the UNESCO guidelines for Conducting Information Manpower Surveys into Thai (Mrs. Suwakhon Phadungath).

4. Produce the first draft of the questionnaire and prepare the accompanying documents for a small pilot test.

5. Finalize the questionnaire and accompanying documents.

6. Decide the dates for conducting the survey.

7. Make a request for the first financial installment for the cost of sending the questionnaire to 2,350 libraries throughout the country.

8. Prepare the summary sheet for analyzing the returned questionnaires.

9. Prepare the final report.

Structure of the Library, Information Centers and Archives in Thailand

At present libraries are rapidly appearing throughout the country. There are various types of libraries, eg. university libraries, college libraries, school libraries, special libraries, the national library, the national archive, and the information/documentation centers. The training institutions can be divided into three groups:

1) departments of library science, which in the Universities offer a bachelor degree and a masters degree in library science;

2) thirty-seven teacher colleges which also offer a bachelor degree in library science; and

3) the Thai Library Association which provides library training every summer for para-professionals or teachers who act as librarians in some schools, public libraries, or special libraries.

The number of libraries, information/documentation centers and archive services as compiled from sources (listed in the References) are as follows:

1	National Library
1	National Archive
24	Governmental University Libraries
5	Private University Libraries
579	College Libraries (including technological colleges, agricultural colleges, teacher colleges, vocational colleges, and business colleges)
2 000	Secondary Schools
21 620	Primary Schools
265	Special Libraries
52	Training Institutions
306	Public Libraries

University libraries, college libraries, the National Library, the National Archive, and special libraries are more modern and developed than those of the public/school libraries.

Sources of Information and Questionnaires Received

Two thousand, three hundred fifty (2 350) questionnaires were sent on 26 November 1987 to public libraries, school libraries, special libraries, the National Archive and training institutions. The National Library received 969 questionnaires in the beginning of March 1988. Response rate, classified by type of library and computed into a percentage, is as follows:

TYPE OF LIBRARY	DATA		
	Sent	Received	Percentage
Public Libraries	306	105	34.31
National Library	1	1	100.00
University Libraries	29	23	79.31
College Libraries	572	179	31.29
School Libraries	1 126	539	47.87
Special Libraries	263	81	30.79
National Archive	1	1	100.00
Training Institutions	52	40	76.92
TOTAL	2 350	969	41.23

The percentage of sampled libraries per the number of libraries as a whole was calculated for each category.

TYPE OF LIBRARY	SOURCES		
	Total	Sent	Percentage
Public Libraries	306	306	100.00
National Library	1	1	100.00
University Libraries	29	29	100.00
College Libraries	579	572	98.79
School Libraries	23 620	1 126	4.77
Special Libraries	265	263	99.25
National Archive	1	1	100.00
Training Institution	52	52	100.00
TOTAL	24 853	2 350	9.46

Results of the Survey

All data from questionnaires received was recorded and calculated on summary sheets 1-9 as follows.

SUMMARY SHEET ONE: STAFF EMPLOYED, VACANT POSTS, TOTAL POSTS

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
1.1 Staff Employed (Q2)								
Professional	20	65	329	259	345	143	23	1 184
Para-Prof	121	51	225	290	459	130	21	1 297
Clerical	11	21	261	136	59	86	11	585
1.2 Vacant Posts (Q6)								
Professional	5	0	3	8	30	18	0	64
Para-Prof	4	0	2	7	22	7	0	42
Clerical	5	0	1	10	16	5	0	37
1.3 Total Posts (Q2 and Q6)								
Professional	25	65	332	267	375	161	23	1 248
Para-Prof	125	51	227	297	481	137	21	1 339
Clerical	16	21	262	146	75	91	11	622
1.4 Vacancy Rate (SS 1.2 and 1.3)								
Professional	20%	0%	0.9%	3%	8%	11.2%	0%	5.1%
Para-Prof	3.2%	0%	0.9%	2.4%	4.6%	5.1%	0%	3.1%
Clerical	31.3%	0%	3.8%	6.9%	21.3%	5.5%	0%	5.9%

This Summary Sheet One contains the basic information about the number of staff employed, the numbers of posts that are vacant and the overall total number of post and the vacancy rate. This gives us the first indicator of the workforce for all types of libraries, information centers and archives in fiscal year 1987. The total staff employed by all library systems is: 1,184 professional staff, 1,297 para-professional staff, and 585 clerical staff. The vacant posts are 64 professional staff, 42 para-professionals, and 37 clerical staff. The rate of vacancy has been expressed as a percentage of the total posts.

For all types of libraries, the vacancy rate for professional staff is 5.1%, for para-professional staff--3.1%, and for clerical staff--5.9%. A vacancy rate of between 3% and 5% is considered normal. A vacancy rate below 3%, indicates a surplus of staff while vacancy rates in excess of 5% indicate a shortage (Moore, p. 43). Vacancy rate findings show that the public library system has a 20% vacancy rate for professional staff, a 3.2%

vacancy rate for para-professionals, and a 31.3% vacancy rate for clerical staff. The vacancy rates for professional and clerical staff are in excess of 5% indicating a shortage of staff and indicating that posts are difficult to fill. The vacancy rate for para-professionals is normal. The vacancy rate for all types of staff positions for the National Library, university libraries, and the National Archive, below 3%, indicates a low level of occupational mobility, a sign of surplus staff. College libraries have a 3% vacancy rate for professional staff, which is normal; a 2.4% rate for para-professionals indicating a staff surplus; and a 6.9% rate for clerical staff, indicating a staff shortage. For school libraries, the vacancy rate for professional and clerical staff are 8% and 21.3% respectively, indicating a staff shortage. The vacancy rate for para-professionals is a normal 4.6%. The rates for special libraries' are 11.2% for professional staff (shortage), and 5.1% and 5.5% for para-professional and clerical staff respectively (normal).

SUMMARY SHEET TWO: NUMBERS LEAVING JOBS

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
2.1 Staff Employed (Q4.1)								
Professional	1	1	0	2	0	1	2	5
Para-Prof	1	0	0	2	1	0	0	4
Clerical	0	0	1	3	1	1	0	6
2.2 Internal Departures (Q4.2)								
Professional	0	0	3	10	15	8	0	36
Para-Prof	7	0	1	5	20	3	0	36
Clerical	1	0	0	1	1	2	0	5
2.3 Wastage (Q4.3)								
Professional	0	1	1	3	7	3	0	15
Para-Prof	0	0	2	14	10	2	0	28
Clerical	0	0	3	8	5	1	0	17
2.4 Total Numbers Leaving (Q4.4)								
Professional	1	2	4	15	22	12	0	56
Par-Prof	8	0	3	21	31	5	0	68
Clerical	1	0	4	12	7	4	0	28
2.5 Turnover Rate (SS1.1 and Q4.4)								
Professional	5%	3.1%	1.4%	5.8%	6.4%	8.4%	0%	4.9%
Para-Prof	6.7%	0%	1.5%	7.2%	6.8%	3.9%	0%	5.3%
Clerical	9.1%	0%	2%	8.8%	11.9%	4.7%	0%	5.4%

This sheet records the numbers of staff who have left their jobs in the previous 12 months (October, 1986 - September, 1987). The figures for absolute loss are derived from the number of personnel who have either died or retired. Figures for internal departures show the numbers of staff who moved to other jobs in the library, information centers, or archives. Figures for wastage show the staff who have moved out of the library, information centers, or archives to work elsewhere, to continue their education, and so on. Also, some who moved out are now unemployed.

The turnover rate is calculated from the number of staff who leave during the year expressed as a percentage of the number employed. A turnover rate of 10% or less usually indicates a high rate of loss (Moore, p. 45). The percentage of the turnover rate shown in Summary Sheet Two indicates that all types of staff and library systems have a fairly static workforce.

SUMMARY SHEET THREE: NUMBERS JOINING SERVICE

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
3.1 Training Input (Q5.1)								
Professional	12	0	35	130	176	55	0	408
Para-Prof	79	0	0	92	215	29	0	415
Clerical	0	0	6	39	23	20	0	88
3.2 Internal Arrivals (Q5.2)								
Professional	0	0	2	3	18	4	0	27
Para-Prof	2	0	0	5	15	1	0	23
Clerical	0	0	0	0	5	0	0	5
3.3 Re-Entry (Q5.3)								
Professional	0	0	2	0	1	2	0	5
Para-Prof	0	0	0	1	10	10	0	21
Clerical	0	0	0	4	1	4	0	9
3.4 Total Number Joining (Q5.4)								
Professional	12	0	39	133	195	61	0	440
Par-Prof	81	0	0	98	240	40	0	459
Clerical	0	0	6	43	29	24	0	102

Summary Sheet Three records information about the numbers of staff who joined the service in the previous 12 months (October, 1986 -- September, 1987). The National Library and the National Archive had no staff joining during the last 12 months. The school libraries had more professional and para-professional staff joining

the library during the last 12 months than the other kinds of libraries. People join in a variety of different ways. A significant number of professional staff in library schools and college libraries come from training institutions. However, training institutions provided no professionals for the National Library or the National Archive. There is also a significant flow of para-professional staff into school libraries. The figures for professional and para-professional staff of school libraries coming from other libraries, archives, and information services, are the highest within their groups. Para-professionals of school and college libraries are the primary group whose members join through re-entry.
To compare the wastage and the re-entry one subtracts the re-entry from the wastage (SS2.3-SS3.3) as follows:

Wastage (Q4.3)

Professional	0	1	1	3	7	3	0	15
Para-Prof	0	0	2	14	10	2	0	28
Clerical	0	0	3	8	5	1	0	17

Re-entry (Q5.3)

Professional	0	0	2	0	1	2	0	5
Para-Prof	0	0	0	1	10	10	0	21
Clerical	0	0	0	4	1	4	0	9

For professional staff, the National Library, the college libraries, the school libraries, and the special libraries have a net gain which indicates that they were bearing a heavy cost in training individuals only to lose them to other libraries. Only the university libraries have a net loss, indicating that a general return to work by people who had left previously for a variety of reasons. The same obtains for para-professionals and clerical staff, except that the special libraries experience a net loss.

SUMMARY SHEET FOUR: STAFF RECEIVING TRAINING

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
4.1 This Country (Q3.1)								
Professional	16	2	51	51	130	44	1	295
Para-Prof	41	0	8	27	160	39	0	275
Clerical	4	0	13	12	6	14	0	49
4.2 Other Countries (Q3.2)								
Professional	0	0	14	1	0	6	9	30
Para-Prof	0	0	0	0	1	3	0	4
Clerical	0	0	0	0	0	3	0	3

This records the information on the number of staff who are receiving training while remaining in the employment of a library, archive, or information service. The school libraries devote considerable effort to training professionals and para-professionals within the country. The university libraries and the National Archive devote much effort to training professionals in other countries.

SUMMARY SHEET FIVE: NET GROWTH IN POSTS
(to obtain the net growth figure subtract the answers to questions 9 and 10 from the answers to questions 7 and 8)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
5.1 LAST 12 MONTHS (Q7 - Q9)								
Professional	0	2	5	0	7	9	0	23
Para-Prof	8	0	3	4	10	2	0	27
Clerical	0	0	5	5	2	3	0	15
5.2 NEXT 12 MONTHS (Q8.1-Q10.1)								
Professional	4	18	14	30	45	9	0	120
Para-Prof	13	5	15	35	49	21	0	138
Clerical	5	2	11	24	11	9	0	62
5.3 NEXT FIVE YEARS (Q8.2-Q10.2)								
Professional	31	20	49	67	112	44	0	323
Para-Prof	35	9	64	91	122	44	0	365
Clerical	30	2	55	62	48	31	0	228

This records the net growth in the number of posts during the last 12 months, over the next 12 months, and over the next 5 years. The net growth last year is smaller than the growth expected next year. The growth over five years is not equivalent to five times the growth predicted for the next year. The total net growth rate can be calculated as follows:

	Professional	Para-Prof	Clerical
Last year	1.9%	2.0%	2.6%
Next year	9.6%	10.3%	10.0%
Next five years	25.9%	27.3%	36.7%

SUMMARY SHEET SIX: RATES OF WASTAGE. RE-ENTRY, ETC. PROFESSIONAL STAFF (Note that similar sheets will be needed for para-professional staff and clerical staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
6.1 Supply now (SS1) (staff employed)	20	65	329	259	345	143	23	1 184
6.2 Plus Absolute Loss (SS2)	1	1	0	2	0	1	0	5
6.3 Plus Internal Departures (SS2)	0	0	3	10	15	8	0	36
6.4 Plus Wastage (SS2)	0	1	1	3	7	3	0	15
6.5 Minus Training Input (SS3)	12	0	35	130	176	55	0	408
6.6 Minus Internal Arrivals (SS3)	0	0	2	3	18	4	0	27
6.7 Minus Re-entry (SS3)	0	0	2	0	1	2	0	5
6.8 Equals Supply Last Year	9	67	294	141	172	94	23	800
6.9 Absolute Loss Rate	11.1%	1.5%	0%	1.4%	0%	1.1%	0%	0.6%
6.10 Internal Departure Rate	0%	0%	1%	7%	8.7%	8.5%	0%	4.5%
6.11 Wastage Rate	0%	1.5%	0.3%	2.1%	4%	3.2%	0%	1.9%
6.12 Training Input Rate	133.3%	0%	11.9%	92.2%	102.3%	58.5%	0%	51%
6.13 Internal Arrivals Rate	0%	0%	0.7%	2.1%	10.5%	4.3%	0%	3.4%
6.14% Re-entry Rate	0%	0%	0.7%	0%	0.6%	2.1%	0%	0.6%

Summary Sheet Six shows the absolute loss rate for the public library is the highest. The college, school, and special libraries have similar internal departure rates. The public libraries have the highest training input rate, followed by the school and the college library. School libraries have the highest percentage of internal arrivals rate and wastage rate. Special libraries show the highest re-entry rate percentage.

SUMMARY SHEET SIX: RATES OF WASTAGE, RE-ENTRY, ETC.
PARA-PROFESSIONAL STAFF (Note that similar sheets will be needed for the professional and the clerical staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
6.1 Supply now (SS1) (staff employed)	121	51	225	290	459	130	21	1 297
6.2 Plus Absolute Loss (SS2)	1	0	0	2	1	0	0	4
6.3 Plus Internal Departures (SS2)	7	0	1	5	20	3	0	36
6.4 Plus Wastage (SS2)	0	0	2	14	10	2	0	28
6.5 Minus Training Input (SS3)	79	0	0	92	215	29	0	415
6.6 Minus Internal Arrivals (SS3)	2	0	0	5	15	1	0	23
6.7 Minus Re-entry (SS3)	0	0	0	1	10	10	0	21
6.8 Equals Supply Last Year	48	51	228	213	250	95	21	906
6.9 Absolute Loss Rate	2%	0%	0%	1.9%	0.4%	0%	0%	0.4%
6.10 Internal Departure Rate	14.6%	0%	0.4%	2.3%	8%	3.2%	0%	4%
6.11 Wastage Rate	0%	0%	0.9%	6.6%	4%	2.1%	0%	3.1%
6.12 Training Input Rate	164.6%	0%	0%	43.2%	86%	30.5%	0%	45.8%
6.13 Internal Arrivals Rate	4.2%	0%	0%	2.3%	6%	1.1%	0%	2.5%
6.14% Re-entry Rate	0%	0%	0%	0.5%	4%	10.5%	0%	2.3%

Public libraries have the highest percentage for absolute loss and internal departure rates. College libraries have the largest percentage for wastage rate. Public libraries have a significant rate for training input. School libraries have the highest percentage for internal arrival rate. The re-entry rate of the special libraries is the highest.

SUMMARY SHEET SIX: RATES OF WASTAGE, RE-ENTRY, ETC.
CLERICAL STAFF (Note that similar sheets will be needed for the professional and para-professional staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
6.1 Supply now (SS1) (staff employed)	11	21	261	136	59	86	11	585
6.2 Plus Absolute Loss (SS2)	0	0	1	3	1	1	0	6
6.3 Plus Internal Departures (SS2)	1	0	0	1	1	2	0	5
6.4 Plus Wastage (SS2)	0	0	3	8	5	1	0	17
6.5 Minus Training Input (SS3)	0	0	6	39	23	20	0	88
6.6 Minus Internal Arrivals (SS3)	0	0	0	0	5	0	0	5
6.7 Minus Re-entry (SS3)	0	0	0	4	1	4	0	9
6.8 Equals Supply Last Year	12	21	259	105	37	66	11	511
6.9 Absolute Loss Rate	0%	0%	0.4%	2.9%	2.7%	1.5%	0%	1.2%
6.10 Internal Departure Rate	8.3%	0%	0%	1.0%	2.7%	3%	0%	1%
6.11 Wastage Rate	0%	0%	1.2%	7.6%	13.4%	1.5%	0%	3.3%
6.12 Training Input Rate	0%	0%	2.3%	37.1%	62.2%	30.3%	0%	17.2%
6.13 Internal Arrivals Rate	0%	0%	0%	0%	13.5%	0%	0%	1%
6.14% Re-entry Rate	0%	0%	0%	3.8%	2.7%	6%	0%	1.8%

College and school libraries are very close to the highest absolute loss experienced by university libraries, while for the internal departure rate, public libraries experience the highest rate. School libraries have high rates for wastage, training input, and internal arrivals. Special libraries have the highest rate of re-entry.

SUMMARY SHEET SEVEN: SUPPLY AND DEMAND -- THE SHORT TERM PROFESSIONAL STAFF (Note that similar sheets will be needed for para-professional and clerical staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
7.1 Supply Now (SS1) (Staff employed)	20	65	329	259	345	143	23	1 184
7.2 Minus Absolute Loss	1	1	0	2	0	1	0	5
7.3 Minus Internal Departures	0	0	3	10	15	8	0	36
7.4 Minus Wastage	0	1	1	3	7	3	0	15
7.5 Plus Training Input	12	0	35	130	176	55	0	408
7.6 Plus Internal Arrivals	0	0	2	3	18	4	0	27
7.7 Plus re-entry	0	0	2	0	1	2	0	5
7.8 Supply Next Year	31	63	364	377	518	192	23	1 568
7.9 Total Posts Now (SS1)	25	65	332	267	375	161	23	1 248
7.10 Plus Net Growth Next 12 Months	4	18	14	30	45	9	0	120
7.11 Demand Next Year	29	83	346	297	420	170	23	1 368
7.12 Demand Next Year	29	83	346	297	420	170	23	1 368
7.13 Minus Supply Next Year	31	63	364	377	518	192	23	1 568
7.14 Training/Recruitment Needed next 12 Months	-2	20	-18	-80	-98	-22	0	-200

Summary Sheet Seven for professional staff indicates the supply next year, the demand next year, and the need for training and recruitment during the next 12 months.

SUMMARY SHEET SEVEN: SUPPLY AND DEMAND -- THE SHORT TERM PARA-PROFESSIONAL STAFF (Note that similar sheets will be needed for professional and clerical staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
7.1 Supply Now (SS1) (Staff employed)	121	51	225	290	459	130	21	1,297
7.2 Minus Absolute Loss	1	0	0	2	1	0	0	4
7.3 Minus Internal Departures	7	0	1	5	20	3	0	36
7.4 Minus Wastage	0	0	2	14	10	2	0	28
7.5 Plus Training Input	79	0	0	92	215	29	0	415
7.6 Plus Internal Arrivals	2	0	0	5	15	1	0	23
7.7 Plus re-entry	0	0	0	1	10	10	0	21
7.8 Supply Next Year	194	51	222	367	668	165	21	1 688
7.9 Total Posts Now (SS1)	125	51	227	297	481	137	21	1 339
7.10 Plus Net Growth (SS5) Next 12 Months	13	5	15	35	49	21	0	138
7.11 Demand Next Year	138	56	242	332	530	158	21	1 477
7.12 Demand Next Year	138	56	242	332	530	158	21	1 688
7.13 Minus Supply Next Year	194	51	222	367	668	165	21	1 688
7.14 Training/Recruitment Needed Next 12 Months	-56	5	20	-35	-138	-7	0	-211

The figures indicate that the need for training and recruitment for all types of library, archive, and information services is negative, except for the National Library, the university libraries, and the National Archive.

SUMMARY SHEET SEVEN: SUPPLY AND DEMAND -- THE SHORT TERM CLERICAL STAFF (Note that similar sheets will be needed for professional and para-professional staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
7.1 Supply Now (SS1) (Staff employed)	11	21	261	136	59	86	11	585
7.2 Minus Absolute Loss	0	0	1	3	1	1	0	6
7.3 Minus Internal Departures	1	0	0	1	1	2	0	5
7.4 Minus Wastage	0	0	3	8	5	1	0	17
7.5 Plus Training Input	0	0	6	39	23	20	0	88
7.6 Plus Internal Arrivals	0	0	0	0	5	0	0	5
7.7 Plus re-entry	0	0	0	4	1	4	0	9
7.8 Supply Next Year	10	21	263	167	81	106	11	659
7.9 Total Posts Now (SS1)	16	21	262	146	75	91	11	622
7.10 Plus Net Growth (SS5) Next 12 Months	5	2	11	24	11	9	0	62
7.11 Demand Next Year	21	23	273	170	86	100	11	684
7.12 Demand Next Year	21	23	273	170	86	100	11	684
7.13 Minus Supply Next Year	10	21	263	167	81	106	11	659
7.14 Training/Recruitment Needed Next 12 Months	11	2	10	3	5	-6	0	25

This indicates that the need for training and recruitment of all types of libraries, except for special libraries and the National Archive, is positive.

SUMMARY SHEET EIGHT: SUPPLY AND DEMAND -- THE MEDIUM TERM PROFESSIONAL STAFF (Note that similar sheets will be needed for para-professional and clerical staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
8.1 Supply Now (SS1) (Staff employed)	20	65	329	259	345	143	23	1 184
8.2 Minus Absolute Loss	1	1	0	2	0	1	0	5
8.3 Minus Internal Departures	0	0	3	10	15	8	0	36
8.4 Minus Wastage	0	1	1	3	7	3	0	15
8.5 Plus Training Input	12	0	35	130	176	55	0	408
8.6 Plus Internal Arrivals	0	0	2	3	18	4	0	27
8.7 Plus re-entry	0	0	2	0	1	2	0	5
8.8 Supply in 5 Years	31	63	364	377	518	192	23	1 568
8.9 Total Posts Now (SS1)	25	65	332	267	375	161	23	1 248
8.10 Plus Net Growth In Next 5 Years (SS5)	31	20	49	67	112	44	0	323
8.11 Demand in 5 Years	56	85	381	334	487	205	23	1 571
8.12 Demand in 5 Years	56	85	381	334	487	205	23	1 571
8.13 Minus Supply in Five Years	31	63	364	377	518	192	23	1 568
8.14 Training/Recruitment Needed in Medium Term	25	22	17	-43	-31	13	0	3

This shows the need for training and recruitment of professional staff for the National Library, the public libraries, the university libraries, and the special libraries. College libraries and school libraries have a negative need for training and recruitment because the supply expected in 5 years is greater than the demand predicted in 5 years.

SUMMARY SHEET EIGHT: SUPPLY AND DEMAND -- THE MEDIUM TERM PARA-PROFESSIONAL STAFF (Note that similar sheets will be needed for professional and clerical staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
8.1 Supply Now (SS1) (Staff employed)	121	51	225	290	459	130	21	1 297
8.2 Minus Absolute Loss	1	0	0	2	1	0	0	4
8.3 Minus Internal Departures	7	0	1	5	20	3	0	36
8.4 Minus Wastage	0	0	2	14	10	2	0	28
8.5 Plus Training Input	79	0	0	92	215	29	0	415
8.6 Plus Internal Arrivals	2	0	0	5	15	1	0	23
8.7 Plus re-entry	0	0	0	1	10	10	0	21
8.8 Supply in 5 Years	194	51	222	367	668	165	21	1 688
8.9 Total Posts Now (SS1)	125	51	227	297	481	137	21	1 339
8.10 Plus Net Growth (SS5) Next 5 Years	35	9	64	91	122	44	0	365
8.11 Demand in 5 Years	160	60	291	388	603	181	21	1 704
8.12 Demand in 5 Years	160	60	291	388	603	181	21	1 704
8.13 Minus Supply Next Year	194	51	222	367	668	165	21	1 688
8.14 Training/Recruitment Needed next 12 Months	-34	9	69	21	-65	16	0	16

This record illustrates figures calculated for supply and demand in 5 years for para-professional staff. The need for training and recruitment shown for public libraries and school libraries is negative. For the rest, raining and recruitment needs are positive.

SUMMARY SHEET EIGHT: SUPPLY AND DEMAND -- THE MEDIUM TERM
CLERICAL STAFF (Note that similar sheets will be needed for professional and para-professional staff.)

	Pub	Nat	Univ	Coll	Sch	Spec	Arch	Total
8.1 Supply Now (SS1) (Staff employed)	11	21	261	136	59	86	11	585
8.2 Minus Absolute Loss	0	0	1	3	1	1	0	6
8.3 Minus Internal Departures	1	0	0	1	1	2	0	5
8.4 Minus Wastage	0	0	3	8	5	1	0	17
8.5 Plus Training Input	0	0	6	39	23	20	0	88
8.6 Plus Internal Arrivals	0	0	0	0	5	0	0	5
8.7 Plus re-entry	0	0	0	4	1	4	0	9
8.8 Supply in 5 Years	10	21	263	167	81	106	11	659
8.9 Total Posts Now (SS1)	16	21	262	146	75	91	11	622
8.10 Plus Net Growth (SS5) Next 5 Years	30	2	55	62	48	31	0	228
8.11 Demand in 5 Years	46	23	317	208	123	122	11	850
8.12 Demand in 5 Years	46	23	317	208	123	122	11	850
8.13 Minus Supply in 5 Years	10	21	263	167	81	106	11	659
8.14 Training/Recruitment Needed in the Medium Term	36	2	54	3	41	42	0	191

The need for training and recruitment for the clerical staff of all types of libraries is positive.

SUMMARY SHEET NINE: OUTPUT FROM TRAINING INSTITUTIONS

		Professionals	Para-Professionals
9.1	Year 1	743	695
9.2	Year 2	850	532
9.3	Year 3	1067	331
9.4	Year 4	928	360
9.5	Year 5 (This Year)	967	243
9.6	Year 6	684	272
9.7	Year 7	761	113
9.8	Year 8	764	169
9.9	Year 9	651	145
9.10	Year 10	667	145

Summary Sheet Nine records the total output of professionals and para-professionals from the training institutions for the previous five years (1982-1986) and the following five years (1987-1991).

Supplementary Information

Information contained in the section of supplementary questionnaires is concerned with the problems libraries, information services, and archives face. The main problem is lack of personnel. In schools, librarians teach and manage the library at the same time. Public libraries are sometimes managed only by para-professionals and janitors. One public librarian claims he was a janitor before. Lack of qualified librarians is another problem. The recruitment of professionals or para-professionals, in some places, is impeded under the influence of those higher in the political hierarchy, leaving libraries with only the unqualified.

The budget for filling more positions is frozen. This is really the crucial problem for library expansion and management.

Recommendations

Governmental organizations should look more closely to the problems most libraries, information services, and archives face. Increasing the budget of these institutes to improve library education of personnel and to getting more qualified staff are other possible solutions.

There should be a national committee on library development for the whole country. This committee can be formed from expert or experienced librarians, instructors, information scientists, and related staff of various institutes. The committee can analyze the problems and offer recommendations for solving them to the

government. Standards for personnel at various levels, technical works, etc., can also be established by this committee.

International organizations can also play an important role by providing financial support for various personnel development and training techniques, including such tools as the survey/research on manpower.

REFERENCES

1. Directory of Special Libraries in Thailand. Bangkok, Thai Library Association, 1985. 275 p. (in Thai).

2. List of Central Governmental Schools of Secondary Education Division. Bangkok, Department of General Education, 1986. (mimeographed; in Thai).

3. List of Primary Schools. Bangkok, 1987. (mimeographed; in Thai).

4. List of Private Vocational Schools. (mimeographed; in Thai).

5. List of Regional Governmental Schools of Secondary Education Division. Bangkok, Department of General Education, 1986. (mimeographed; in Thai).

6. MOORE, Nick. Guidelines for Conducting Information Manpower Surveys. v.1. The Manual. Paris, UNESCO, 1986. 92 p.

7. MOORE, Nick. Guidelines for Conducting Information Manpower Surveys. v. 2. Questionnaires and Accompanying Documents. Paris, UNESCO, 1986. 34 p.

8. Thai Government Organization Directory. 7th ed. Bangkok, Foreign News Division, the Public Relations Department, 1986. (in Thai and English).

PREDICTING THE FUTURE: MANPOWER FORECASTING FOR THE LIBRARY AND INFORMATION PROFESSIONS IN SOUTHERN AFRICA

J.R. NEILL and D.M. MBAAKANYI
University of Botswana
Gabarone, Botswana

Introduction

Perhaps the only safe assurance that one can make about the prediction of manpower needs is that the forecasts are invariably inaccurate, unreliable, and unpredictable and the results usually have very little correlation with the actual demands for manpower that eventually take place. Previous attempts at predicting manpower requirements have not been entirely successful.

For instance, in the United Kingdom the two professions that have been most carefully and consistently planned are the medical profession and the teaching profession. Until comparatively recently, this planning resulted in great under-production of doctors and equally massive over-production of teachers.[1]

In a similar way, a recent study[2] of library and information studies in the United Kingdom, has revealed the unreliable statistical base upon which decisions are being made, and the general paucity of information that is available on the library and information workforce. For a profession whose essential function is the provision of information, this revelation does not inspire one with a great deal of confidence, in either the library and information profession, or the panacea to be provided by manpower forecasters.

It would seem therefore fairly safe, to predict that the less developed countries, which cannot boast the same level of statistical and demographic procedures, are similarly unable to solve the puzzle of forecasting future manpower needs and requirements. This is certainly true for the library and information workforce in Southern, Central and Eastern Africa, for which, despite a number of efforts, a forecast of manpower needs has yet to be convincingly carried out.

The Early Efforts

The development of personnel is perhaps one of the most important features of a nation's library and information system. The accurate and continuous forecasting of the numbers, types, and characteristics of existing and required personnel is obviously an important part of this process. Yet, a reliable and credible forecast of future manpower needs cannot be made with regard to such characteristics as recruitment, education, job designation, level of operation, wastage, promotion, career hierarchies, skills, tasks and functions.

Throughout the region, and especially since independence, manpower planning has mainly concerned itself with gauging projected economic growth against future personnel requirements as a means of determining the required output from the educational sector to meet that demand. This has resulted in a number of national surveys, which in the main have attempted to identify personnel shortages as a basis for predicting future requirements[3] Unfortunately, despite these efforts, it seems clear that, to date, little specific attention has been given to library and information personnel, in spite of the existence of a number of library education and training programmes within the region. Indeed, it seems fairly clear, that even at a basic information gathering level, facts, figures, and reliable statistics are not readily available and are probably not even being compiled on a national or regional basis.

This is not to deny that there have been a number of attempts within the region to gauge manpower demands. There have been several examples of efforts in this area, largely as a preliminary to the establishment of a training and education program for librarians. The most notable has been the report by John Dean[4] which covered East and Central Africa, and a much less ambitious attempt by Ronald Benge[5] which confined itself to Botswana, Lesotho, and Swaziland.

The remit of Professor Dean's consultancy essentially involved the identification of a suitable venue for a regional post-graduate program in library science, as well as providing a manpower estimate from the region in order to test the viability of such a program. Almost a two-fold increase in established posts was predicted over a five year period as summarized below:

* existing professional establishment (1974) -- 371
* projected establishment (1980) -- 679
* wastage (1975-80) -- 184
* required output from proposed school (1975-80) -- 863

It is not easy to really offer any sound verdict about these predictions as the proposed school which Dean recommended for location at the University of Nairobi was never established, and, as previously mentioned, facts, figures, and reliable data on the library and information workforce in the region are not easily available. There are in existence two post-graduate programs within the region: Uganda and Botswana, with the former apparently enrolling so few students, and then seemingly only from Uganda, as to make it virtually non-operational; and the latter commencing in 1986 and enrolling no more than a dozen students a year from Botswana and the region. Recognizing that most post-graduate study must be taking place outside the region, particularly in the United States and United Kingdom, the fact of the matter is that Dean's

projections have never really been able to be proved or disproved, since the regional school as recommended, was never established.

Botswana, Lesotho, and Swaziland had long enjoyed an association through the regional university system which they jointly participated in. Thus, it was perhaps not surprising when Ronald Benge was requested to look into the viability of a library education program based at one of the three campuses, in which each country would have a share in the student enrollment. Obviously, part of the report was devoted to establishing the existing demand for librarians in the sub-region and whether or not there was sufficient need for a program to be set up and continue indefinitely in the future. Despite this, Benge's report is characterized by a paucity of actual figures. The only numerical data provided includes a total number of qualified or semi-qualified staff in post at the time of the survey; that is 25 with a projected increase of approximately 120 over the next five year period.

Paradoxically, the Dean proposal for a regional library school that was underpinned by a fairly comprehensive manpower survey never actually materialized while Benge's proposal for a sub-regional school, which was hardly justified by any form of manpower analysis, gave birth to a highly successful department of library studies at the University of Botswana. Obviously, a variety of factors unrelated to manpower forecasting can explain this paradox. It is interesting though to note that the Benge report which paid scant attention to forecasting numbers and quantifying demand actually led to the creation of a training institution which has developed to the extent where it can boast student enrollment from not only Botswana, Lesotho, and Swaziland but also Zambia, Malawi, Zimbabwe, Tanzania, Uganda, Kenya, Sudan, Ethiopia, Cameroon, Seychelles[6], and Mauritius.

The Harare Workshop

In March, 1985, the German Foundation for International Development (DSE) brought together in Harare, Zimbabwe, a representative group of library, archive and information personnel from the region at one of its regular series of 'Expert Meeting.' The principal aim of the meeting was to determine the library and information needs of the region. Papers were prepared on ten countries covering Ethiopia, Kenya, Lesotho, Mauritius, Somalia, Swaziland, Tanzania, Uganda, Zambia, and the Seychelles.

Collectively, the papers are representative of the present state of manpower forecasting of the region's library and information professions. Generally speaking, data on the employment of library and information personnel is either non-existent, unknown, incomplete, imprecise or misleading. One of the first requirements of these papers was to quantify the number of library and information personnel currently in employ. This should

have been a fairly straightforward task; but it soon became apparent that, with perhaps one or two exceptions, there is no concise numerical record of personnel currently in employ in the libraries of Southern, Central, and Eastern Africa. Indeed, in one case, the paper stated that even the number of libraries in a particular country was unknown. The absence of such information is obviously a major impediment to any systematic manpower planning at both national and regional levels.

Nevertheless, most of the participants at the Harare Experts Meeting made an attempt to predict their respective countries' future manpower needs. The results, as most of the writers of those papers generally acknowledged, have to be treated with a great deal of circumspection and caution for, in the main, they are unreliable. Obviously, this was not exactly what DSE had in mind when they commissioned the papers and convened the meeting. The original intention had been to simply ascertain the numbers of library and information personnel in the region who would require training during the period 1985-87, which in turn would assist DSE in setting priorities and refining its scholarship program. A simple enough task, but one that proved to be elusive for a variety of reasons, symptomatic of the myriad problems faced by the majority of manpower planners who attempt to predict the future.

The DSE Regional Survey

During the course of the Harare meeting it had become increasingly apparent that the anticipated outcome could not materialize. Coincidentally, both DSE and the Department of Library Studies, University of Botswana had, quite separately established a working relationship with Nick Moore, who at the time was developing and testing his Guidelines for Conducting Information Manpower Surveys[7] which was subsequently published by UNESCO.

Originally, it had been planned to test the draft guidelines in Botswana alone, but upon hearing about the forthcoming Harare meeting, Moore felt that this presented him with a unique opportunity for representatives of an entire region to consider his draft model for manpower surveys and hopefully utilize it, possibly in a regional survey. DSE concurred and it was agreed that the draft guidelines could form the basis for the development of a regional survey which would be discussed at the Harare meeting. Unfortunately for both DSE and Nick Moore, the subsequent survey did not materialize in the way that both parties had, quite independently, envisaged.

Aims and Objectives

As previously mentioned, the original intention of DSE had been to gauge the potential demand for the education and training of library and information personnel within the region, and it was

BEST COPY AVAILABLE

agreed at the Harare workshop that this could be achieved through the administration of a 'Manpower Survey Questionnaire', which would try to achieve a comprehensive survey of all library/documentation/archives services within the Public Service of the Countries concerned.

Unfortunately, Moore was not available at the Harare meeting and thus this draft model for manpower surveying was only used for the utility of its questionnaire and it was never considered in the context of its overall objectives. Moore clearly recognized that education and training were obviously important elements in planning and developing the information workforce, and his guidelines were quite ambitious in scope, embracing all aspects of workforce planning with the aim of developing an understanding of the workforce and its component parts. The lack of appreciation of each participants of the Harare meeting, was clearly going to lead to problems and, as we shall see later on, this exactly what happened. In addition, both DSE and the library and information personnel brought together in Harare clearly failed to appreciate the complexity involved in carrying out a manpower survey, and the need for a clear statement and acceptance of a fully articulated set of objectives prior to the utilization of the survey instrument. Two separate surveyors with quite different objectives, each unsure of what the other wanted, and employing a group of people throughout the region who were probably equally as unsure of the basis upon which a manpower survey should be conducted.

The lack of a standardized approach proved to be one of the major impediments preventing a successful outcome to the exercise. In particular, there was no prior definition of terms and what was actually being surveyed which resulted in quite contrary definitions of professionals and para-professionals in the workforce. No blue print was provided as to the kind of data that was envisaged and consequently a rational census with a set of unified results proved impossible. In addition, some of the participants were not even able to produce a master list of library and information institutions which existed in the region. This information could have provided a more useful set of data than actually collected.

The Questionnaire

The Harare meeting then proceeded to develop and adopt a questionnaire (see appendix) based on those previously prepared by Moore, but differing in a number of instances which would later prove significant when both DSE and Moore attempted an analysis.

Question 1 at first glance appears a perfectly straightforward question and is virtually replicated in Moore's Guidelines. However, as previously mentioned, a comprehensive national survey that would form the basis for a regional analysis,

was from the onset only practicable in those countries where an up-to-date and accurate listing of institutions was readily available. It is doubtful whether in some countries this is possible and thus it was improbable that even a reasonably accurate inventory of libraries could be achieved.

Furthermore, the distinction between National and Public Libraries which appears in both DSE and Moore questionnaires is possibly not realistic in the context of the region, if not most of Africa where in many cases the National Library serves a multiplicity of functions usually associated with a national library, but with the predominant one being the development of a public library service. The DSE survey then proceeded to complicate question 1 by attempting to distinguish between documentation centers and special libraries. It is doubtful whether there is any need in the first place to make so many categories in relation to type of service, and the multiplicity of separate designations identified in the DSE survey certainly cannot be justified by the number of library and information services that exist in the region.

A categorization into three broad groupings -- National/Public, Educational (School, College, University), and Special (including Archives, Documentation Centers) -- would have perhaps been preferable and more in line with the present state of library and information development within the region. Indeed it is interesting to note that even the attempt at an analysis achieved in Table 1 was unable to satisfactorily identify staff by the type of service they were employed in. Even Moore has seemingly not justified why such a matrix of library-information types is desirable.

One can see the advantages of possessing such information in a country which can boast a large workforce, employed in a large number of different types of libraries, and who have the opportunity to be enrolled in a wide variety of formal and continuing education programs. However, in the majority of countries of the region which can boast only one centralized national-public library system, at the most two university libraries, few special libraries, a virtual absence of school libraries, and possibly only one library school that basically aims to produce a generalist librarian, the requirement for institutional designation is probably meaningless.

Question 2 was one that Moore, when writing up his guidelines, was extremely critical of, for being too elaborate in detail, yet one can have some sympathy with the participants of the Harare meeting who were perhaps more than aware of the confused employment patterns of the region and the need to go beyond a simple definition of professional, para-professional, and clerical.

If nothing else the question highlights the rich variety of qualifications open to the professional library which may present no major problem in a large workforce, but in a small country with possibly only a handful of professionals in employ, it is quite amazing how the appearance of an individual who does not fit the pre-determined pattern of professional qualification can cause disquiet. The concern over the Loughborough MLS for non-graduate librarians which has recently been debated in the region is a specific example. A far more compelling reason for the inclusion of this data in question 2, is the prevalence within the region of professional level posts to be occupied by non-professionals. While Moore actually advocates in his guidelines that one should disregard qualifications and even allocate a professional librarian working in a clerical post to the clerical designation, this surely misses the point.

The Harare meeting clearly recognised that what one really required to know was not only the establishment, professional v. para-professional and clerical, but more importantly, how various staff are deployed throughout the establishment. In the absence of a clear definition of what constitutes a professional or a para-professional, it would seem out of line to take a look at the workforce's qualifications. In this region, not only are para-professionals occupying professional posts because of a dearth of professional librarians, but also in some countries the holders of what many would consider to be a para-professional qualification are in fact accorded professional status by one employing authority and para-professional status by another. Certainly, within the context of Southern, Central and Eastern Africa, the picture is more complex than Moore appreciated, and although as we shall see from the following analysis that DSE questionnaire did not actually solve the problem, it is at least apparent that the Harare participants acknowledge and appreciate the complexity of the problem.

Questions 3 and 4 were really at the heart of what DSE really wanted to know. Without clarification as to what was exactly meant by a "staff development program" question 3 proved to be of limited significance whereas question 4 which attempted to quantify training needs was obviously of greater utility. Much of what has been said previously about the categorization of qualifications applies with equal force here, with the additional point that the specification of A.L.A. and F.L.A. no longer seems warranted. Furthermore categories of D.E. and F. only helped in complicating the analysis as they are extremely ambiguous, unhelpful, and do not correspond with the earlier listing which are based on levels of employment and anticipated qualifications. Perhaps if a third category of trainee post had been mentioned, in addition to professional and para-professional, much of the resulting confusion surrounding this question would have been clarified.

Questions 5, 6, and 7 can be considered together as they are linked by a common purpose which was to gauge the active supply by quantifying departures and arrivals over a twelve month period and thus seeking to establish how the workforce was evolving. Unfortunately, because of the inadequacy of question 6 which sought to establish where the departures from the workforce were going to, it would later prove impossible in the analysis to put a precise figure on the active supply. It was in fact quite immaterial to seek out information on why staff left the service, but, as Moore has already pointed out in his study, what one needs to know is whether those leaving employment are moving to similar posts within the library information sector, or are, actually moving into a completely unrelated and different career, thus withdrawing their services from the overall library and information workforce.

The scope of the survey was originally intended to embrace most of the wider region, commonly referred to as Southern, Central, and Eastern Africa (Mauritius, Uganda, Zimbabwe Somalia, Kenya, Ethiopia, Sudan, Ruanda, Lesotho, Botswana, Zimbabwe, Tanzania, Zambia, Swaziland, Seychelles, and Malawi). Individual institutions were identified in each country to administer the questionnaire and analyze the results on a national basis with DSE agreeing to produce a regional overview of the entire survey as one of their regular publications. Unfortunately, the response was limited to Botswana, Zimbabwe, Sudan, Mauritius, Tanzania, and the Seychelles and the completeness of the coverage in these individual countries is unknown. Needless to say, DSE felt unable to write up and publish the incomplete set of results and seemingly were unwilling to pursue the matter further.

DSE were probably quite justified in abandoning the survey at this stage, for, as outlined in the previous section, the questionnaire, was flawed, perhaps accounting for the poor response and further, the resulting analysis would have been difficult. However, during the course of writing this paper it was inevitable that the authors would attempt some analysis if only to strengthen the criticisms they were preparing to make about questionnaires in particular and the survey in general. Incomplete as the analysis had to be, due to the various omissions and deficiencies, the authors felt that it could possibly provide some interesting pointers and in addition provide some encouragement to continue with the idea of a regional manpower survey which would draw on the lessons learnt from this initial attempt.

Indeed, it did prove possible to analyze the questionnaire using the guidelines developed by Moore although as previously pointed out, a complete set of results from which firm conclusions could be drawn proved elusive. Thus, for example, it was reasonably easy to determine the vacancy rate amongst the various categories of staff by expressing as a percentage the number of vacancies out of the total number of posts.

Table 1: Partial analysis of the DSE regional library and information manpower survey, 1985.

	Professional	Para-Professionals	Clerical
1. Staff Employed	206	523	758
2. In-Training	14	55	9
3. Vacant Posts	134	231	83
4. Frozen Posts	38	18	8
5. Total Posts	340	754	841
6. Vacancy Rate	39%	31%	10%
7. Total No.'s Leaving	52	23	62
8. Total No.'s Joining	44	55	75
9. Turnover Rate	25%	4%	3%
10. 5 Year Projection	454	634	362

In a similar way it was quite possible to establish a turnover rate for each category of staff by expressing as a percentage the number who leave during the previous twelve month period, out of the total number employed. Even this seemingly simple exercise did point to some difficulties in the structure of the questionnaire. For example, it was unclear from the questionnaire returns whether or not the numbers of staff in training were additional to those identified under staff employed or if they were an integral part of the total.

Obviously, from such a partial analysis of an incomplete survey it would be rash to draw any firm conclusions; but even allowing for a 50% degree of error, the vacancy rate in the professional and non-professional categories is remarkably high, and in fact is not inconsistent with a general perception than can be obtained even with a cursory knowledge of library and information development in the region. Certainly, the major conclusions that can be made is that education and training facilities are insufficient in relation to the demands of the market; the library profession is unable to attract staff; and the

number of suitable candidates available for employment is inadequate. The important thing is though that incomplete as the survey is, the partial analysis nevertheless has revealed one major problem, and it is this sort of information which, if properly collected and documented, can greatly assist in convincing reluctant planners and decision-makers, and finance conscious officials that action needs to be taken.

The Future

It seems clear then that to date there has been no satisfactory study of the region's library and information personnel, and even at basic information gathering level, facts, figures, and reliable statistics are not as yet being compiled in any meaningful way. The DSE survey therefore must be viewed as a preliminary attempt to undertake this task and, although incomplete, it has nevertheless, served an extremely useful purpose and has already highlighted a number of interesting characteristics of the region's library and information workforce. That the exercise should be followed up is surely without doubt. Ideally, a workforce planning model should be adopted by the region and a regular series of surveys conducted at intervals of three to five years through which the true character and a complete picture of the workforce will emerge.

However, useful as it is to get the numbers right in order to maximize the development of the workforce, additional information is essential. For example, it would seem important to know, not only the number of personnel employed within a large library system but, in addition, how they are deployed, what tasks they are performing, how those tasks relate to the education and training they are likely to, or have received, and most importantly, how equipped those personnel are to respond to change and more importantly, how prepared they are to initiate new developments. A useful model already exists for forecasting the numbers, and once that has been properly applied, the next important stage must be to develop a similar model that will seek to assess both how the workforce is presently used, as well as being able to provide the necessary information that will assist in ensuring that the workforce is employed more effectively in the future.

REFERENCES AND NOTES

1. TURNER, J.D. The role of the University of Botswana in Meeting National Manpower Requirements. In M. Crowder (ed.) Education for Development in Botswana. Gaborone: Macmillan, 1984.

2. Report of the UGC/NAB Transbinary Working Group on Librarianship and Information Studies, June, 1986 (unpublished monograph).

3. Particular attention should be paid to Republic of Botswana, Ministry of Finance and Development Planning, Manpower and Employment in Botswana, Government Printer, 1973. Malawi Government, Manpower and Social Services Section, Manpower Survey: Results of the Survey and Analysis Requirements 1971-80, Zomba, Government Press. Swaziland Government, Ministry of Finance and Economic Planning, Skills for the Future: Education and Manpower Perspectives in Swaziland; Mbabane, 1978. Republic of Tanzania Manpower Planning Division Annual Report to the President, Dar es Salaam, 1970. Zambia, Office of the President, Zambian Manpower, Government Printer, Lusaka, 1969. Zimbabwe, Patriotic Front, Zimbabwe Manpower Survey, IUEF, 1978.

4. DEAN, J., A Regional Library Science Program for Eastern Africa. (mimeographed copy) Perth, 1974.

5. BENGE, R. C., Report on a Visit to Lesotho, Swaziland, and Botswana, (mimeographed copy), 1976.

6. HUTTEMANN, L. (ed.), Manpower Training Needs: Proceedings and Papers of the Information Experts Meeting, 18-21 March, 1985, Harare, Zimbabwe. DOK 1309 A/a. Bonn: German Foundation for International Development, July, 1985.

7. MOORE, N., Guidelines for Conducting Information Manpower Surveys, Paris: UNESCO, 1986.

8. GIBBONS, F. and J.R. NEIL, eds., Education and Training for Librarianship and Information Work in Southern, Central, and Eastern Africa. Proceedings of the post SCECSAL seminar held at the University of Botswana, August 11-12, 1986 (publication due May, 1988).

Appendix

DSE SURVEY QUESTIONNAIRE

Manpower Survey Questionnaire (Second Draft -- Final Version)

1. Please check in the box which most closely describes your service:

Public Library		
National Library		
University Library		
College Library		
School Library		
Archives Service		
Documentation Center		
Special Library:	Government	
	Industry	
	Research	
	Museum	

2. Please give the total number of staff (in the appropriate box) presently employed in your organization (give only the highest qualification):

A. Professional:	ALA	
	FLA	
	B.A./B.Sc. (Lib. Studies)	
	B.Sc. (Information)	
	Post-Grad. Diploma	
	M.Sc. (infor. sci.)	
	M.L.S.	
	M.Phil.	
	Ph.D.	

B. Para-Professional: ☐

C. Clerical: ☐

D. Non-Library B.A./B.Sc. ☐

E. On-the-Job Training ☐

F. Others

Please Specify: _____

3. Do you have a staff development program?

Yes ____ No ____

(If your answer is yes, go to question 4; if no, then go to question 5.)

4. State the number of persons who are currently on training and/or need to be sent for training, in each of the following categories:

A. Professional:

ALA	☐
FLA	☐
B.A./B.Sc. (Lib. Studies)	☐
B.Sc. (Information)	☐
Post-Grad. Diploma	☐
M.Sc. (infor. sci.)	☐
M.L.S.	☐
M.Phil.	☐
Ph.D.	☐

B. Para-Professional: ☐

C. Clerical: ☐

D. Non-Library B.A./B.Sc. ☐

E. On-the-Job Training ☐

F. Others

Please specify: _____

5. Please give the number of staff who have left the service in the last 12 months, in each category:

Professional	
Para-professional	
Clerical	
Non-Library B.A./B.Sc.	
Others	

Please specify: _____

6. Indicate for which of the following reasons your staff left your service:

	Death	Resignation	Dismissal	Training	Changed Jobs	Others
Profess.						
Para-Prof.						
Clerical						
Others						

7. Please give the number of staff who have joined the service in the last 12 months:

Professional	
Para-Prof.	
Clerical	
Non-Library B.A./B.Sc.	
Others	

Please specify: _____

8. Please give the number of posts in your service which are presently vacant or frozen:

	Vacant	Frozen
Professional		
Para-Prof.		
Clerical		
Others		

Please specify: _____

9. Please give the number of staff needed in the next five years:

	Next Year	Next 2 Years	Next 3 Years	Next 4 Years	Next 5 Years
Professional					
Para-Prof.					
Clerical					
Others					

Please specify: _____

10. What types of continuing education do you like to have offered? Please state by ticking the appropriate box:

	Workshop	Seminar	Vacation Courses	Short Courses	Others
Professional					
Para-Prof.					
Clerical					

Please specify 'Others': _____

Now, please specify under each type of continuing education listed below the subject to be presented, such as:

A = Management
B = Computer Studie
C = Public Relations
D = Records Management
E = Documentation
F = User Studies
G = User Education
H = Others

Please specify: _____

Please insert only one letter per box:

	Workshop	Seminar	Vacation Courses	Short Courses	Others
Professional					
Para-Prof.					
Clerical					

Please Specify 'Others': _____

11. Explain briefly some of your staffing problems:

SESSION III

APPROACHES TO MANPOWER PLANNING IN THE INFORMATION AND COMMUNICATIONS FIELDS

24 August 1988

Chair: Toni CARBO BEARMAN (U.S.A.)

PROBLEMS IN FORECASTING MANPOWER NEEDS

Monique JUCQUOIS-DELPIERRE
Department of Information Science
University of Düsseldorf
Düsseldorf, Federal Republic of Germany

Introduction

As Nick Moore invites us to do in the UNESCO guidelines, I will consider the problems for appropriately training information staff-- that is the 'qualitative' point of view of the question -- but, firstly, I would like to introduce the problem of finding the right numbers of such staff -- this will be the 'quantitative' analysis.

I don't pretend to present a complete theoretical and statistical model about problems and methods. Having much experience of unexpected changes in the field of information, I would prefer to analyze in an empirical or even pragmatic way the questions an information educator asks himself. I am aware that in this field we run the risk of talking more about fiction than about facts or real possible forecasts. But I hope that some instants of reflection together will bring us some answers.

Investigating the Present and Past in Order to Predict the Future

A 'philosophical' point of view

At the beginning of 'Jolly May', a film produced in 1968, we see a brave happy man. He is doing good business. He sells trousers. What will he do with the money he is earning? Buy more trousers. Why? To sell more. And with the money then made?

Another story, another brave happy man. It is one of those dry and sunny days, you can have, for instance, on the Mediterranean. A brave happy man has sold his complete case of tomatoes. His day's work is finished. He can enjoy himself.

Maybe we can perceive with both brave men how a conception of life is a fundamental factor to be considered before building an information center or a trouser factory. In the first case, our brave man will need the help of personnel, in the other case probably not.

For information, another principle -- let us say philosophical -- must be mentioned: the attention to be paid to the relative or absolute importance of information for research and development.

-- Is information a factor in progress or not?

-- Is information indispensable for better research or for appropriate development?

-- To what extent must an information center or a library play a role?

-- Does information make an enterprise more competitive?

-- Can an information center be sacrificed to other more strategic posts?

Answering these questions correctly can take us some way towards determining right numbers of information officers now and in the future. It also partially determines the importance of information science itself, whether it must be a teaching program, a part or full academic degree, a technical degree, or a postgraduate degree.

Other debatable or subjective factors will determine or have determined the quantitative evolution of information personnel.

Quantitative Manpower Needs

Let us take a particular case by way of example.

Some facts:

In 1967, a research institute wanted to create a center able to produce and manage a database. It began at this time with one person, who was responsible for everything.

In 1968, the project was made official and the center received one secretary.

In 1973, cooperation with Austria and the U.S.A. began for exchanging indexing materials. This cooperation didn't disturb the increasing numbers of indexers.

In 1988, the promotional measures of the Office of Employment make possible two complete research projects, one in automatic indexing, the other for a user interface. Both projects will be operational in 1990.

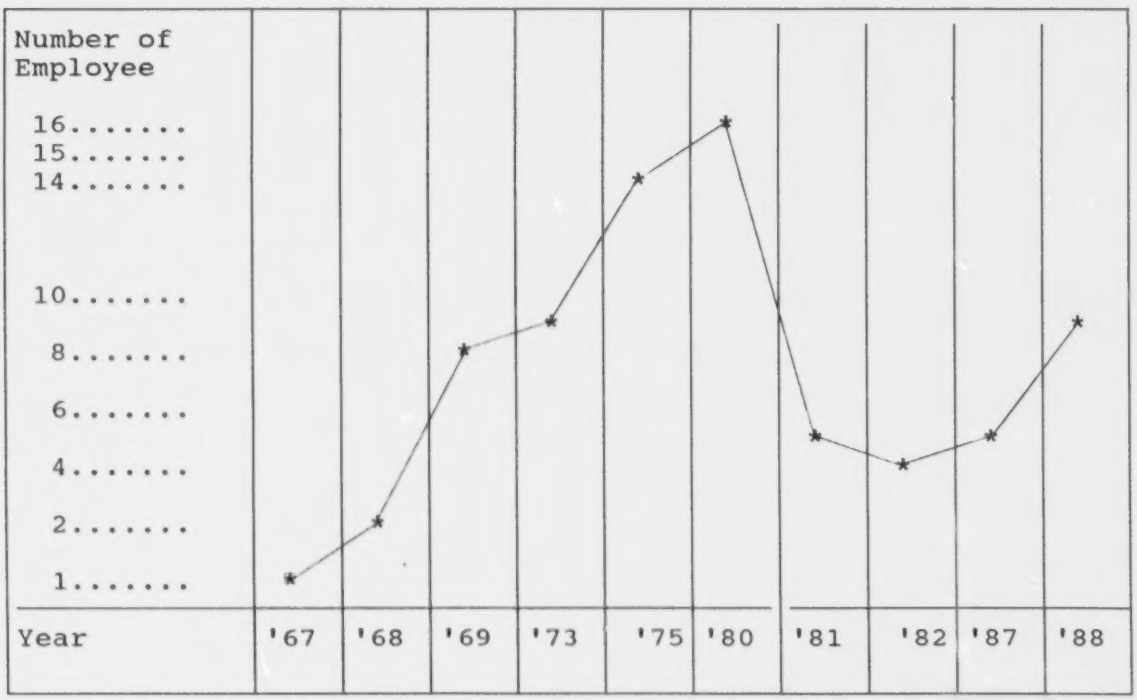
Evolution of the staff from 1967 until 1988.

	'67	'68	'69	'73	'75	'80	'81	'82	'87	'88
Leader	1	1	1	1	1	-	-	-	1	1
Secretary	-	1	1	1	1	1	1	1	-	-
Typist	-	-	1	2	2	1	1	1	1	3
Indexer/ Retriever	-	-	1	2	2	2	1	3/4	6/4	3/4
Free-Lance Indexer	-	-	3	1	5	10	-	-	-	1
Comp. Analyst	-	-	-	-	1	1	1	-	-	1
Comp. Programmer	-	-	-	-	1	1	1	1	-	-
Photo Technician (microfilms)	-	-	-	1	1	-	-	-	-	-
Information Scientist	-	-	-	-	-	-	-	1/4	1/2	2
										1/2

What is the information manpower in this center? Analysts, probably, when they are specialized in database management. Indexers are quite obviously information officers, although they are very often specialists in a particular field and have no true knowledge about information science. They can follow precise indexing rules and schemes. Secretaries, when they are able to help in text editing, cataloging, data recording and providing a user's services. We have only to exclude the typists because they are definitely not qualified in information science.

We can describe the diagram below the evolution of the information personnel:

Evolution of the Personnel -- Information Center -- University of Düsseldorf, 1967 to 1988.



Why this fluctuation in numbers? Were the needs so different?

We can pick up several REASONS for this evolution:

Political. An information center takes part of a sub-country, a country, a continent, and even of the world. Its development is dependent on the successive official policies relating to this context. These policies may be education policy, economical and social policies, or employment policies.

In 1967, the country and sub-country wanted to build new universities and promote original research.

In 1980, a plan concentrating on universities and research fields began. In reality, this plan led to the suppression of many centers and universities.

Economical. From 1967 to 1974, the economic expansion and the belief in economic growth made every idea or initiative possible.

In the eighties, high unemployment has made the personnel afraid of moving. On the other hand, an office of employment can receive funds to start an employment policy as is the case in several countries in the world. It explains the improvement of the situation in 1988.

Social. Work evolved in a short time. The lack of working time was not compensated for by new manpower. Strict social laws protect employees at non-scientific levels much more than the others, who have contracts for fixed periods. Older people stay until the end of their careers while other well-specialized persons remain unemployed. For this reason and other social components like lack of adaptation to new techniques, we observe a certain wastage of precious manpower. Cutting back on numbers of personnel brought about higher levels of overtime with the vicious circle effect you can well imagine.

Financial. The sources of money have changed with the time or are no longer available. Financial decisions affect the information world. Up till 1980, it was possible to create jobs with the help of the Employment Office. On the other hand, in 1985, the DFG (German Research Society)planned a program to promote online information centers in libraries. This will result in multiplying information centers (Henrichs).

Public Online Services in West Germany

Services	Absolute	Percentage
In Universities	106	26%
Outside Universities	298	74%
Total	404	100%

Online Services Sponsored by the German Research Society (DFG)

Services in Universities	Absolute	Percentage
DFG Sponsored	44	42%
Sponsored By Other Programs	62	58%
Total	106	100%

Organizational. The type of integration of a center into

the enterprise and the kind of enterprise assure a possibility of change, large or small. In our special case, the center was dependent on the general evolution of a German university in the North Rhine Westphalia.

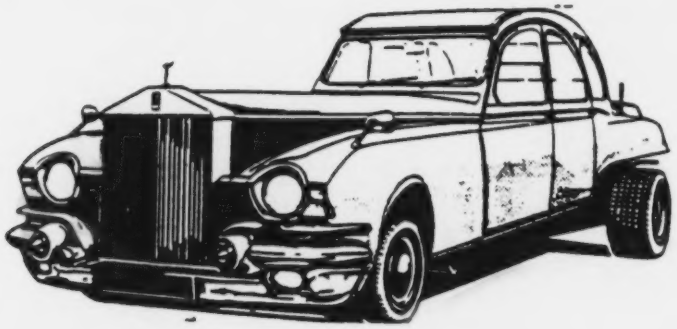
All the organization depends on the Ministry of Culture. Because of the dependence of this center on the faculty of philosophy and literature, it has to follow the same rules. In 1980, the Federal Ministry handed over the direction of the cultural affairs to the Federal Lands. The Lands had to decide whether to continue or to interrupt the projects financed by the Lands. The Finance Ministry refused to continue to support any projects in this area.

On the other hand, in the same city, a documentation center, dependent on a very healthy factory and research center has sensibly improved its situation since 1967.

Collaboration and cooperation with other centers and other countries can improve the quality and the quantity of the information products.

Human. Personal conflicts, dynamism of certain persons, physiological and psychological evolution of the personnel (age, accident, etc.) are central factors that explain the creation and the development of a center, the possibility of cooperation, the diversification of activities. In our particular case, the lack of headway from 1980 to 1985 was due to personal motivation.

The personnel manager's position in the firm's hierarchy is important. If he is not on the board he will find it difficult to affect policy decisions which have considerable effect on the need for manpower. And presence on the board is useless if the personnel manager does not have the professional attitude and expertise necessary, backed up by company staff, to make an effective contribution. The product of such a lack of cooperation could be the following (Bramham):



Beautiful, maybe but inconsistent and useless.

Material. New techniques and consequently new hardware could influence some aspects of the information profession. The easy manipulation of text editing and terminals didn't change fundamentally the number of typists. As I said, this category of personnel is much more protected than the scientists. But new techniques have permitted new research projects. Computers have changed the image and almost the nature of information science (see after).

Not enough space and material tools can be obstacle to installing new manpower. More material resources can sometimes take the place of some people.

Evolution of the information science course at the University of Düsseldorf.

Parallel to the above, we can observe the evolution of the information science course at the University of Düsseldorf.
In 1975, the course began with 20 students and 2 lecturers. In 1985, the study became official. In 1987, there were 200 students, 1 professor, 1 permanent lecturer, and 3 invited lecturers. The compulsory part of the course was enlarged from 40 hours to 80 hours.

A political factor improved the student numbers and enabled visiting lecturers to be engaged. A demographical factor must also be taken into account in this area. There are fewer pupils in the schools. On the other hand, the universities can expect more and more students because of social and intellectual evolution. It depends on the general education policies of the different countries, whether this increasing number of high-school students will be favored or not.

Can we generalize the remarks above?

The organization of information studies and information management evolves because of the external and internal constraints quoted.

We can add some other factors; such as, a geographical factor: the geographical situation , climate, and mentality must not be forgotten in forecasting; an historical one -- traditions play a large role in every type of enterprise -- and also some variable factors like an unexpected amount of information needs from outside.

The organization of information is also dependent on an annual planning, a timetable imagined or imposed by the constraints quoted. The objectives of the institution (s), center (s), or library/libraries have to be laid down precisely. The way or conception of life of the enterprise or of the information are long-term and fundamental objectives.

The strategy of the center takes into account the constraints, to adopt, adapt an objective policy to long-term aims and to meet the variety of situations that may arise.

This policy can be: to follow the general information activities; to maintain its level at the same height as the others, i.e. developing cooperation; to reach the top and to do this in a dynamic way; and to maintain itself at the best research standard.

This policy can also be: product oriented: if the center has to produce a precise output and the personnel must be calculated in respect of its aim. For example, a center has to produce 10,000 abstracts per year, coming from 250 review. One person could produce 1,000 of them. A minimum of 10 indexers had to be recruited.

User oriented or demand-oriented: we observe here a vicious circle: the willingness for publicity has a direct influence on the retrieval needs. Personnel or post-oriented: in many cases the number of posts are fixed and decided on in the course of a long-term planning. They are mainly a function of a present situation. For realizing its aims, a center has at its disposal resources: human beings, equipment, buildings, a budget, computer aided systems and software, and others.

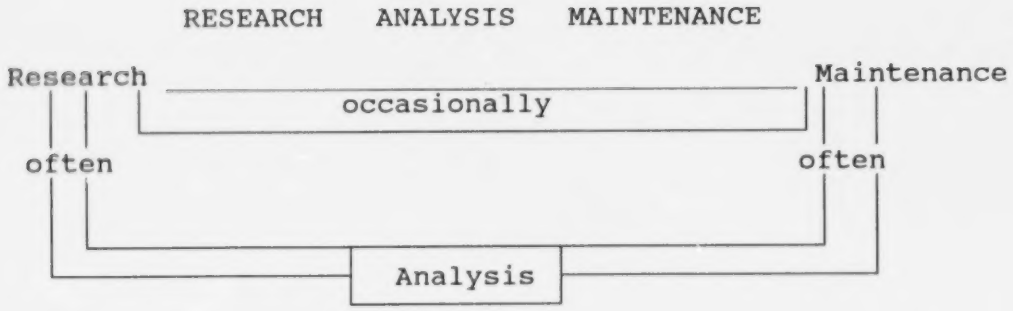
Needs of quality in information manpower

When we consider the human resources we can see three different aspects:

1. the research aspect: team or individual deals with some fundamental questions like program development or the conception of new systems or training.

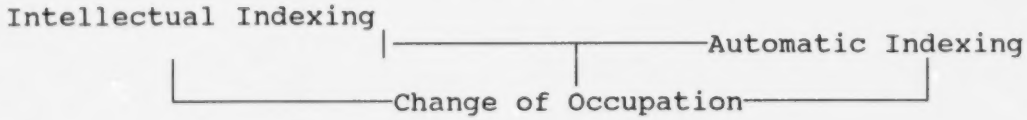
2. analysis: a team takes care of the theoretical application of the works of the research team; this team, person or group measure the impact of new application on the management; they have to forecast medium-and-long-term consequences of this application;

3. maintenance: a team or a person must look after the daily realization of this application.



These three types of activities are found inside the information center or largely inside the complete enterprise. Every person assumes functions according to his or her capacity and wishes. his or her tasks satisfy himself or the others but he or she has to be flexible in this choice. Why? Let us take an example. An information worker is occupied by manual or, better, intellectual, indexing. The research team has perfected a method for automatic indexing. The one progressively replaces intellectual indexing. It means that this person has to be trained for other activities. In the next diagram, we see the progressive evolution of these activities:

Flexibility of an Individual



At the cross-point, the information officer has to change his activities completely, if automation replaces intellectual work. His activities will be more working on dictionaries or thesauri, etc.

Need for information scientists to be flexible: Let us take some examples coming from online research: the German Research Society has improved this area in libraries. What about the qualifications of personnel? (Henrichs)

Qualifications of the Personnel

Career	Number of Employees	
	Absolute	Percentage
Higher Service (civil)	132	77%
High Service	32	19%
Middle Service	6	3%
Assistants	2	1%
Total	172	100%

And what about the number of staff?

Manpower in Online Services

Number of Employees	Number of Services	
	Absolute	Percentage
1	10	23%
2	7	16%
3	5	12%
4	5	12%
5	4	9%
6	4	9%
7	1	2.5%
8	1	2.5%
9	6	14%

Online specialists in libraries are actually librarians who take over retrieval activities. We need to make a remark about another currently important area: research in medicine. Do we need more staff for this kind of retrieval or more publicity for the other databases? In both cases, we observe a differentiation in information work.

Information in certain sectors is dependent on evolution of this sector. We mentioned medicine, but we could add chemistry.

Differentiation of information forms, as film, video, viewdata opens new information professions. A quite different type of training must be required.

Impact of computers. New systems such as 'DBase' or microcomputers such as MacIntosh, raise some questions: "At which level must the information scientist be able to work?" In the information sector, technology doesn't suppress jobs but provides new and different skills.

New generation of users. Interfaces and manuals reduce the needs at a certain level, create new ones at other levels: updating of manuals or creation of user friendly systems become quite necessary. In any case, the existing personnel must be flexible and courses must take these factors into account.

As a result, we need differentiation of information tasks. Do we need to train more computer software specialists? Or more documentalists? Or more librarians? Or more consultants?

Degrees of qualification required. The right person will be at the right place if there is a good balance between qualification and specialization. The quality of a database like DARC has helped the development of documentation centers near chemical research centers.

Conclusions and Recommendations

This analysis shows that forecasting is unlikely to be that simple. Do we have to forecast manpower?

Case for forecasting: we have to think about the present and the past to ensure a good future. Shortages and surpluses of different types of manpower tend to persist side by side in all economies, whether planned or unplanned. Wastage, over-qualification, and specialization which are not well oriented can be avoided. Forecasts themselves can influence events and it is obvious that study programs have to be planned.

Case against forecasting: we are uncertain about the future and most cited change components are unforeseeable. Extrapolation from the past is unreliable. Statistics can be manipulated.
It is also difficult to distinguish between a 'need' which is essential and a 'want' which is nice to have. Existing personnel modify forecasts and planning.

Nevertheless, we are convinced that minimum forecasts could help to remedy present problems, anticipate emerging problems, and avoid the re-occurrence of other problems.

How could we forecast personnel?

It is important to have permanent information about employment and especially of the students' realities, to enlarge training posts and follow the training process. Attention must be paid to a long and differentiated training. New demand forms must be identified in order to lead employees to new fields of activities. Some statistics and numbers are simple and useful; for example, the time at which staff will leave because of retirement could be kept in mind. The organization of the enterprise must permit flexibility of the present employees and possibilities of out placement.

The education of the information officers must enable them to acquire a large culture, broadmindedness, and a strong base of knowledge. It will be indispensable to find the right level of qualification because it is as bad to be overqualified as to be overspecialized. Our ambition must be to educate people so that they are able to move in the information society and see the present clearly. Good information services will only be able to be offered when we have the right person at the right place at the right time.

REFERENCES

1. Bramham, John. Practical Manpower Planning. 2nd ed. London: Institute of Personnel Management, 1978.

2. Henrichs, Norbert, Informationsvermittlung durch Wissenshaftliche Bibliotheken. ABI-Technick 8/1988/n2, pp. 123 - 136.

ELECTRONIC MEASURES FOR HUMAN RESOURCE RESEARCH

Anthony DEBONS
University of Pittsburgh
Pittsburgh, Pennsylvania (U.S.A)

Mariano MAURA-SARDO and Anne J. THOMPSON
Graduate School of Librarianship
University of Puerto Rico
San Juan, Puerto Rico

Introduction

This presentation reports on the preliminary findings of a study conducted under the auspices of the Graduate School of Librarianship, University of Puerto Rico. Its purpose was to demonstrate the feasibility of conducting human resource surveys in the information intense occupations by electronic means. The demonstration study is phase 1 of a three phase research program of which the goal is to establish the need, present and future, for information professionals that serve academic, governmental, and industrial institutions.

A brief background statement is in order to provide the general context of what is here reported. In 1972, the University of Pittsburgh embarked on a project to determine the need for three classes of information professionals, namely, information specialists, information system analysts, and information scientists. That study revealed that the need was for individuals with baccalaureate degrees -- falling closely to our designation of information specialists -- more or less: programmers. As a result of this study, the University of Pittsburgh and particularly the Graduate School of Library and Information Science was motivated to obtain more extensive data on human resource requirements. A manpower conference resulted --(1976) representatives from government, academia, and industry, as well as, professional associations (i.e. ALA, ASIS, etc.) attended.

A three phase research program was advised: namely; (1) identify the kind of work (functions) information professionals do; (2) determine the background of those performing the functions; and (3) based on the completion of these phases, project the number of individuals needed and the concomitant educational requirements for such professionals. As a result of a grant awarded by the National Science Foundation, phase 1, the functions performed by information professionals and the number of individuals performing the various functions, was obtained. Table 1 presents the information workforce by employment sector and the number of professionals employed in each.

TABLE 1: Number of Information Professionals by Their Workfield and by Their Sector of Employment: 1980

WORKFIELD	SECTOR: INDUSTRY[1]	STATE/LOCAL Govt[2]	FEDERAL Govt[3]	COLLEGES/ UNIVERSITIES[4]	TOTAL
Computer	594 700	42 700	38 100	7 500	683 000
Education/ Training	15 500	107 000	1 200	7 600	131 900
Financial	46 300	21 100	300	1 300	69 000
Information Services	83 800	53 600	12 400	700	150 500
Library	74 500	69 900	5 600	9 800	159 800
Management Support	115 900	36 800	13 600	1 400	167 700
Research	96 900	20 600	5 800	1 500	124 800
Statistical	1 400	2 400	*	100	3 900
Technical Publications	35 200	2 400	1 300	100	39 000
Other	6 700	5 600	300	100	12 700
Unspecified	90 600	7 800	300	*	98 700
TOTAL	1 161 500	370 500	78 900	30 100	1 641 000

* Fewer than a 100 reported.

Notes 1 through 4 identify areas not included in sector categories and are given in endnotes.

Source: OCCUPATIONAL SURVEY OF INFORMATION PROFESSIONALS 1980, University of Pittsburg in conjunction with King Research Incorporated.

These data are included in a book published by M. Dekker, Inc. (publisher), titled: The Information Professional: Survey of An Emerging Field. Unfortunately, sufficient funding for phase 2 and 3 has not been available. However, both of these phases are critical to the interests of Library and Information Science professionals. Thus, it is intended that the 1980 data be updated

and, in addition, data on worker backgrounds for the various functions be obtained. This would include present and projected needs for information professionals. The Puerto Rico Study will provide the basic data on the needs for information professionals in the commonwealth, but more importantly will provide the necessary information on the feasibility of conducting surveys of this sort electronically. This information is critical to the initiation and conduct of an updating of the 1980 survey on manpower in the United States, currently projected for 1990.

There are certain aspects related to the development and conduct of the 1980 Pittsburgh study that are important and should be cited before we provide the data we have obtained from the Puerto Rican demonstration study.

1) Human resource studies have not generally enjoyed high priority for research funding support. The primary reason for lack of enthusiasm for such studies concerns the rapid obsolescence of the data. It is suggested that the information from such research is outdated by the time the results are reported.

2) Survey studies on human resources are likely to incur high implementing costs. Individuals to whom paper and pencil surveys are addressed are likely to disregard or misplace them, thus the need for the assignment of individuals to pursue their completion -- either through telephone or correspondence, preferably by the former.

3) Considerable uncertainty can exist in the mind of respondents about terms used in a survey -- particularly in a new field. It is difficult to anchor down definitions to respondents who are resistant to standardized perceptions about terms and their meaning. Paper and pencil survey instruments often provide limited capability in expanding the concepts or terms without inordinately increasing the complexity of the form. The IRS experience with tax forms in the United States is an example of this.

The use of providing a survey to a respondent through a computer terminal or electronically can reduce some of the foregoing problems experienced in the 1980 study. By presenting survey items electronically, the processing of the data could be expedited and thus the margin of error due to handling of data can be reduced. Follow-up costs can be reduced and conceivably, survey instrument reliability and validity can be increased through programming and other techniques. More importantly, electronic means provide the potential for developing computer -- human dialogue when explanation and more detailed description of terms and concepts are demanded by the user. The Puerto Rican study was undertaken to test those assumptions.

The following data are the result of a demonstration study to determine the programming, transmission, user problems in general when a survey is conducted electronically.

The sample for this demonstration study consisted of six (6) respondents for each of six geographical areas throughout the island Commonwealth of Puerto Rico. For each area, two respondents were obtained for each of the academic, governmental, and industrial communities, with a total sample of 36 respondents.

The survey form used for the 1980 Pittsburgh study was translated from English to Spanish. The translation was then submitted for review by a professional translator to insure that the final translated survey acknowledged and conformed to idiomatic demands representative of the local culture.

A professional systems analyst developed the computer program for presenting the survey items electronically throughout the network comprising the six survey areas.

A manual in Spanish was composed consisting of a detailed explanation of the procedure pertaining to the user's task in responding to the survey electronically. For example, the user was given detailed, step by step, instructions on how to approach, initiate, and consummate the interaction with the computer in the business of responding to the survey items.

Of the 36 individuals asked to participate, seventeen (17) responded. The present investigators soon discovered in the process of conducting the survey the importance of season during which the survey test is conducted. Despite a detailed schedule indicating time and place where the respondents were expected to complete the survey, respondents failed to adhere to the schedule because of summer vacation and other personal contingencies that occurred during this time. Although these circumstances cannot be construed as a function of the method used in the conduct of the survey, they do suggest that survey planning needs to take them into account.

In the early trials aimed at testing the efficacy of the procedure and the corresponding manual, it was found that minor problems can lead to the aborting of the survey. For example, in one case the respondent could not determine how a computer frame, containing the survey items, could be advanced despite the fact that the respondent compile by pressing "c", which the manual indicated would be the procedure to be applied. It so happens that the display or computer frame would not be advanced unless capital "C" is applied. Of course, such problems are resolved in a pretest of the program. It is important, however, to recognize that unless such matters are acknowledged in a careful pretest of the computer sequence, the survey could be aborted.

In addition to the completion of the survey items, respondents were asked to indicate their reaction to the electronic presentation of the survey. Table 2 presents a summarization of the comments received.

TABLE 2: USER REACTION TO ELECTRONIC SURVEY INSTRUMENT
(n=17)

REMARKS	FREQUENCY
Electronic surveys should provide an easy way for making corrections	4
Some experience about computers is necessary for answering the survey easily	2
Program should be more user - friendly	2
Instruction manual is not clear enough; more examples should be included	5
Monitoring service should be provided for clarifying doubts of the respondents	2
The electronic survey is too long	2
Response time by computer should be faster	1
The electronic survey was found highly technical	2
Program should provide a mechanism for skipping sections that do not apply	1

In this preliminary report, it is not possible to arrive at any definitive conclusions as to the advantages or disadvantages that can be construed directly to the administering of a survey electronically. But the data from Table 2 are suggestive, namely:

1) The individuals selected to execute the survey form need to know, or have familiarity with, computers. In paper-pencil surveys, the respondents do not necessarily require experience in filling out questionnaires. The fact that electronic administration of surveys require attention to this detail impacts on sample characteristics (eg. size, randomness, etc.)

2) Given that the sample selected for implementing the survey is computer literate, it can be expected that the speeding of response and reduction of errors in data collection can be a significant advantage.

3) The assumption that administering of a survey

electronically can reduce follow-up efforts and cost does not seem to be merited from these preliminary observations. The respondents indicated that they prefer assistance in the form of monitoring while responding to the survey items. The fact that 19 respondents did not respond to the survey via the instructions given to them is another indication of this fact.

4) The usual complaint as to the length of a survey form seems to apply equally to the electronic method.

5) If written material is used to aid the respondent to reply electronically, it is necessary that such material be carefully tested prior to its distribution to the sample population. Of course, the detail of precision required should correlate with the level of computer literacy discussed previously.

All in all, there seems to be a significant difference between paper-pencil and electronic methodology in the administration of a survey of the sort attempted in this study. A follow-up report to this one will detail the data on the information functions surveyed and provide information as to the reasons why 19 of 36 individuals selected for this demonstration study did not respond.

NOTES

1. Industry sector does not include: industrial establishments reported by Dun and Bradstreet as having fewer than fifty employees (full-time and part-time), many firms found in Standard Industrial Classifications deemed unlikely to employ information professionals, and portion of the U.S. banking industry.

2. State and Local Government sector does not include: higher education institutions, several functional areas, and agencies with fewer than fifty full-time equivalent employees reported by the Bureau of Census Governments Tape 1977.

3. Federal Government sector does not include: military personnel or employees of intelligence agencies, Tennessee valley Authority, Federal Reserve Board, Judiciary branch, United States Courts, Supreme Court, White House staff, and Submitting Offices that reported fewer than fifty full-time employees.

4. Colleges and Universities sector does not include: institutions with fewer than fifty full-time employees reported in the Education Directory, Colleges and Universities. 1977-1978, and Federally-Funded Research and Development Centers.

THE INTERSECTION OF COMMUNICATION AND INFORMATION: SOME IMPLICATIONS FOR HUMAN RESOURCES FORECASTING

Royal D. COLLE
Department of Communication
Cornell University
Ithaca, N.Y. U.S.A.

Introduction

When you get 'information sciences' and 'communication' people together it seems clear that these fields are converging if not merging. Two years ago at the Federation (FID) meeting in Montreal, a participant from Africa spoke about setting up a library in a rural community and diffusing information from that library. That sounds a lot like what an extension agent might do. In my community in New York State, the library operates a daily television service at the local television cable system.

On the other hand, people associated with health, nutrition, agriculture, and the mass media have a growing interest in information campaigns, social marketing, and communication planning. These processes are quite a step away from producing radio spots, writing pamphlets, and drawing posters. They are characterized by their greater emphasis on information gathering, processing, storage and retrieval -- all of which are important to the 'situational analysis' that provides the foundation for the communication strategies.[1]

Some of the convergence can be attributed to technology. Microcomputers and video hardware (including disks and tape) dictate that some of the same kinds of skills are going to be in demand for both the "information" and the "communication" fields. Among the implications: there will be considerable competition for already scarce talent.

More than a decade ago, UNESCO published a monograph in its Reports and Papers in Mass Communication series entitled Towards Realistic Communication Policies.[2] It noted the following:

> In the context of long-range development of mass communication and the demands such development will impose on its manpower requirements, it is obvious that realistic manpower projections must relate to the goals, objectives and targets enunciated by the national development plan. In most countries, training at all levels is not yet related to any precise manpower investigation of the communication sector.... A disciplined approach to the field is still required (p. 52).

And the author of those words suggested that any viable communication plan should ensure that academic institutions can feed into the potential market persons who have educational backgrounds relevant to the market needs.

What has happened in the decade since the UNESCO monograph was issued? In 1980, the McBride Commission stressed the importance of communication in contemporary society and linked this need with training and policy. These are the words of the Commission:

> In view of the acute shortage of adequately trained personnel in many developing countries, the question of building up of manpower resources must remain a priority concern of policy-makers and planners.[3]

Also during the past decade we have seen substantial growth throughout the world in education and training activities related to communication. A survey by the Clearinghouse on Development Communications published in 1983 resulted in a selected listing of 106 institutions offering degree or short courses in communication for developing country personnel.[4] A 1987-1988 survey by IDRC[5] listed approximately 250 communication training venues around the globe.

Likewise in the past decade, the demand for communication skills has grown enormously. Some of this results from the expansion of mass media systems such as the exponential growth of television in India and elsewhere, and the worldwide explosion of video.[6]

But equally important has been the increased recognition of the need for systematic, planned communication programs in the social development field. I-E-C[7] -- once most closely associated with population and family planning -- is now a major part of some efforts to deal with diarrhea, the AIDS disease, agricultural development, massive vaccination goals, and sociological aspects of irrigation.

We've also had a lot of thoughtful debate on "old paradigms" and "new paradigms" and the need for new policies and models and theories related to communication.[8]

Yet basic problems concerning training in the communication and information fields remain. Earlier this year, for example, leading communicators and educators from the principal UN development agencies, along with similar persons from bilateral and private sector agencies, met in New York for an informal consultation. A common sentiment expressed in the report of the meeting was the need for agreement on what long-term communication capacities and institutions are needed and on how to build them.[9]

However, we should note that a more fundamental and important step should precede the task of building resources -- a step that has been largely overlooked: we have not designed a systematic way of forecasting the need for communication skills. It seems all too obvious that we cannot intelligently use the limited resources available for communication training without some effort at forecasting as an element of planning. This is particularly vital in Third World countries where trained manpower is scarce and competition for those who are trained is very keen.

The unfortunate consequence of inadequate planning is the prevalence of ad hoc training that rarely fits long term regional or national circumstances.

Human resource planning is not an easy task. As the McBride Commission suggests, there is ambiguity as to who is "in communication" because "communication kinds of people" are found in a wide range of sectors and they have a wide array of responsibilities. Added to this is the dynamic and pervasive character of the communication field which has been captured in phrases like the "information society".[10]

An Approach to Forecasting

At least three important steps should be included in a comprehensive effort to provide a nation with the skills it needs to meet the demand for communication and information skills.[11] These include:

> First, explicit descriptions -- however tentative or approximate -- of the "anatomy" of major communication/information systems in a country;
>
> Second, identification of the communication skills necessary to make the systems function; and
>
> Third, determination of the character of training or education appropriate and desirable to make these skills available.

The last item perhaps is clearer than the first two, so we will elaborate on the first and second briefly.[12]

The Anatomy

To examine the total formal communication structure in even the smallest country is complex enough to be operationally unmanageable. The convergence of the communication and information fields increases the challenge and the intimidation! In addition, such an effort--if tried--inevitably would overlook some not-so-obvious communication activities. We think it best to look at

formal and institutionalized communication within the agriculture sector. We've identified a variety of sub-systems including the farms and farmer institutions, research, extension, the supply and in-put structure, the mass media, and the policy and bureaucracy sub-systems. It is possible to describe the kind of information that generally needs to flow within each sub-system and between or among sub-systems. In addition, we can describe the kinds of channels that are or could be used for the effective flow of information -- as well as the volume of flow and the direction of flow.[13] Once this kind of information is made more explicit, it's possible to move to another step.

Communication Skills

Let's look now at the second item on the human resources planning scheme. We all know that communication functions are carried out by many people who are not categorized as "communicators". For example, "information specialists" and an array of other job titles have invaded the conventional library along with the invasion of the computer. Indeed, it is rare to find a job title called "communicator". Thus, the unit of analysis perhaps should not be persons or positions, but skills. The task is to identify the skills needed at various points in the system to make information flow effectively.

These skills might be associated with such persons as extension agents, documentalists, subject matter specialists, information officers, publications editors, graphic artists, agricultural scientists, etc. At some point, these skills must be linked up with persons or positions in the sub-system (or organization). The likelihood exists, of course, that none in the system has been explicitly associated with some of the skills, and this may sometimes explain why there are communication failures. It also may suggest that some positions should be added to the system.

These steps are neither profound nor theoretically challenging. They require a close and careful examination of what's happening (or isn't happening) in the day-to-day affairs of the sub-system (s). Part of the task might be accomplished through sociometric and network analysis techniques. The two steps also require an understanding of the kinds of effort and skills that go into planning, designing, producing, collecting, categorizing, storing, and transmitting information through different kinds of channels, both media and face-to-face.

Some Human Resource Planning Procedures

We can look for additional help in the principles of human resource planning and development (HRPD) which have been extensively used in business and military planning. H-R-P-D helps organizations anticipate their future personnel needs by forecasting the expected

demand for labor, inventorying the available internal supply, and identifying the difference between what will be (or is) needed and what is likely to be available.[14] The complete process would also include the development of policies and plans for providing the supply, either through training, retraining or recruitment.

Using H-R-P-D concepts, we need to consider both "operational expansion" and "functional development".[15] Operational expansion refers to an increase in the numbers of those persons in present categories of skills and job positions.

Functional development suggests the addition of new categories of skills, roles, or jobs -- usually as a result of technological or socioeconomic changes in the environment or policy changes related to the system itself.

Important in either of the situations mentioned is identifying "predictors" such as independent variables which influence demands, or the dependent variable. The "Health for All by the Year 2000" declaration might be such a predictor. It signals a potential shift in emphasis in the health sector from curative to preventive methods. Analysis would reveal that preventive health strategies depend more heavily on voluntary behavior and group consensus -- which in turn depend heavily on information and motivational (i.e., communication) activities.[16] Other predictors of changes likely to influence operational expansion and/or functional development in communication are: introductions of new data storage technology, such as the compact disk; the increasing size of the literate (reading) population; and changes in government information policies.[17]

Forecasting in the Library Field

In 1983, the Caribbean was the setting for a manpower needs assessment effort.[18] Planners concluded that the development of library services in the area required accurate data on the number, training, qualifications, experience, and mobility of people associated with libraries. The goal was to inventory vacancies, job mobility, patterns of growth, indicators of supply and demand for information and library manpower and the current and projected prospects for recruitment and training. Questionnaires were sent to library and information personnel to collect statistical information and opinions related to the situation at that time and what was anticipated in the future. An example of the future orientation was a question that asked: what factors will affect the library requirements in the next ten years? Trend analysis was included by asking about experience over the previous five years. In general, the information was interpreted in demand and supply terms, and took into account available resources, current training programs, and the factors that would influence future needs quantitatively and qualitatively.

Forecasting in Agriculture

Those interested in forecasting personnel and skills needs in the information and communication fields may be able to gain insight from FAO's experience in agriculture.[19] In 1982, a regional conference of African nations requested the FAO to assess the status of trained agricultural manpower in the region and to project future manpower needs for agricultural development through the year 2000. The nations wanted a high priority placed on manpower training programs for agriculture.

Because data were not generally available for drafting a suitable report, the FAO Director-General authorized an extensive manpower assessment for 51 countries. Ultimately, information from 46 African countries formed the basis for the report.

A two-part questionnaire was used. The first part was used to determine the numbers of trained personnel then on the job in each country and the annual attrition rate. Trained personnel were grouped into categories ranging from "professional personnel" -- those with at least a first degree -- to "vocational or artisan personnel" who had vocational or on-the-job training. This was largely the quantitative aspect of the process.

The second part of the questionnaire dealt with more qualitative aspects of forecasting and included data related to changes in agricultural employment patterns, government policies, employment in neighboring countries, and so forth.

According to FAO, it has already used the data for preparing an action plan for agricultural manpower development in Africa. The report notes the following general applications:

The information generated will be used as a basis for the identification and preparation of training programs, training materials, institutional curricula, and for the execution and monitoring of training projects and related activities.

United Nations agencies, bilateral donors, and other sources of international development assistance will be able to use this information in planning assistance programs to African countries in the field of agricultural human resource development and agricultural education.

Individual countries may find this information useful in the preparation and development of national plans to strengthen their in-service programs, training institutions, and trained human resource potential.

(Additional details of the action plan are found in an endnote relevant to this section of the paper.[20])

A Scheme for Strengthening National Capacity

As we suggested earlier, a sector-by-sector analysis of the communication anatomy and skills needs is probably the most expeditious way of approaching forecasting on a national level. For example, similar analyses of the library and information sector, the health sector, the mass media, and other public and private sector systems could be aggregated to provide national estimates of what communication skills are needed. This process would provide ministries, educational institutions, and donor agencies with better guidance as to what training resources might be developed. It would allow more systematic investments in various kinds of degree and non-degree training, whether those investments were for in-country facilities and programs, or for external training. Agencies and donors such as the IPDC[21] and foundations might make it a condition of grants that such assessments be made. This condition might rationalize the highly ad hoc opportunistic array of programs that often characterizes training in information and communication.

We have only touched on the broad outlines and concepts for developing a useful protocol for undertaking practical forecasting in the communication field. We hope that convention programs, international consultations, professional journals, and other devices will be used to refine a technique that can be used as part of sectoral studies, or by itself.

The importance of building national capacity in the information and communication fields rings out in a report by a recent UNICEF/WHO report on "Mobilizing All for Health for All." The report urged that an adequate proportion of resources be allocated to I-E-C, and the report asserted that "the adequacy of human resources in I-E-C, in governments, and WHO/UNICEF must be assessed and enhanced through appropriate management and training action." Systematically forecasting personnel needs is an effective strengthening of such national capacity.

NOTES

1. The collection, organization, and processing of information is illustrated in the very practical environment of the Healthcom project carried out by the Academy for Educational Development in various parts of the world. See especially: Healthcom for Child Survival: Indonesia, AED, Washington, D.C., 1988.

2. LEE, John A. R. Towards Realistic Communication Policies. Paris, UNESCO, 1976.

3. Many Voices, One World. Paris, UNESCO, 1980. 232 p. Sean McBride was the president of the International Commission for the Study of Communication Problems whose mandate was "to study the totality of communication problems in modern societies." Its report ranged from databanks to professional ethics.

4. These were distributed around the world as follows:

Area	Number of Institutions
Africa	19
Asia	29
Caribbean	1
Central and South America	18
Europe	14
Middle East	3
North America	20
Oceana	2

BRACE, Judy. Selected Communications Training Institutions for Developing Country Personnel. Washington, D.C., Clearinghouse on Development Communication, 1983.

5. INTERNATIONAL DEVELOPMENT RESEARCH CENTRE, Ottawa, Canada: Catalog of Communication Training and Production Venues in the World, unpublished report, 1988.

6. See, for example, the special issue of American Behavioral Scientist (30, 5 [May/June, 1987]), devoted to the "VCR Age" and issues of such journals as Media Development, eg. Media Development (34, 1, 1987) documenting video applications in the South Pacific and Brazil; and Media Development (32, 1, 1985) with articles on video use and applications around the world.

7. Information, education, and communication

8. The Asian Mass Communication Research and Information Centre (AMIC) and the World Association for Christian Communication have been among those particularly active in publishing materials related to these issues. See, for example, Neville Jayaweera and Sarath Amunugama (eds.), Rethinking Development Communication, Singapore, AMIC, 1988; MEDIA ASIA (11, 3 [1984]) on communication policy and planning; MEDIA ASIA (13, 1 [1986]0) on communication

theory; and Media Development (34, 1 [1987]) on national communication policies. See also; Hamid Mowlana and Laurie J. Wilson, Communication Technology and Development, Reports and Papers on Mass Communication No. 101, Paris, UNESCO, 1988.

9. Executive Summary: Communication and Education for Development, An Informal Consultation at UNICEF House, New York, March 29--10, 1988.

10. This discussion is expanded in Royal D. COLLE, The Intersection of Communication and Information: Some Implications for Human Resources Forecasting, paper prepared for the Congress of the International Federation for Information and Documentation, Helsinki, Finland, August, 1988.

11. We deliberately use the word "skills" as the unit of analysis, as is explained in the following paragraphs.

12. The following discussion is based in part on Royal D. COLLE and Mallika JALAN, Developing a Needs Analysis Protocol for Human Resources in Communication; a paper prepared for the Biennial meeting of the International Association for Mass Communication Research, Barcelona, Spain, July, 1988.

13. See Mallika JALAN, A Protocol for Training and Manpower Needs Assessment for Agricultural Communication, unpublished Master's Project Report, Cornell University, 1988.

14. See N. MOORE. Survey of Library and Information Manpower Needs in the Caribbean, Paris, UNESCO, 1982.

15. See G.G. ALPANDER. Human Resources Management Planning, New York, American Management Association, 1982.

16. This string of mutually related situations is clearly reflected in a report prepared by the 26th session of the UNICEF -- WHO Joint Committee on Health Policy which met in January, 1987, in Geneva. The report was titled: Mobilizing All for Health for All, Policy and Strategy Issues in Putting Communication, Education, and Communication to Work for Health.

17. UNESCO was on this track in 1974. A report from a meeting in Kuala Lumpur on The Role and Training of Communication Planners

reported: "Since there is no national planning commission in Australia...the Australian Post Office must make its own estimates of needs for the communications services it is likely to be called on to provide. To determine these needs, the A.P.O. conducts seminars and workshops, sets up advisory groups, commissions studies...[and] employs a number of forecasting techniques and models.... Methods of long-term forecasting used include trend projection, 'Delphi' methods, scenarios, and cross-impact studies...." The UNESCO report added: "To predict what society will be doing in the future, the telecommunications planner has to consider the likely activities of people...the size, shape and location of buildings and cities.... All of these have an impact on society's communication needs. Hence the development of a long-term plan is a very complex mix of many factors of which engineering is but one." The report goes on to list a variety of what we've called "predictors". It also noted "a virtual absence of systematic integrative long-term planning for communication as a national resource."

18. G. GREENE and R. ROBB. The Survey and Its Findings. In: 2nd Survey of Library and Information Manpower Needs in the Caribbean. v. 1. Paris, UNESCO, 1985. The account is drawn from Mallika JALAN, A Protocol for Training and Manpower Needs Assessment for Agricultural Communication, unpublished Master's Project Report, Cornell University, 1988.

19. The material following borrows heavily form: Trained Agricultural Manpower Assessment in Africa, a report prepared for the 13th FAO Regional Conference for Africa, in Harare, Zimbabwe, July, 1984.

20. The FAO action plan "will include, but not necessarily be limited to:

- -- strengthening in-service programs for current extension staff
- -- strengthening of national training institutions...
- -- assisting governments with specific manpower planning activities aimed at identifying national training needs and priorities
- -- fellowship assistance for higher level training
- -- ...better utilization of trained personnel.

21. The International Programme for the Development of Communication, an agency associated with UNESCO and the UN.

SESSION IV

QUANTITATIVE METHODOLOGIES: ISSUES AND APPLICATIONS

25 August 1988

Chair: Guy GARRISON (U.S.A.)

MONITORING THE LIS WORKFORCE IN THE UNITED KINGDOM

Christopher TURNER and Felicity BRAY
Department of Library and Information Studies
Brighton Polytechnic
Brighton, U.K.

Manpower Forecasting and Planning

The problems in Manpower Planning are common to most professions. Margaret SLATER (1979) identified two different approaches to the process; the **Cynical** one which suggests an attitude that history is bound to prove any forecasting wrong but it is better than doing nothing; and an **Optimistic** one which suggests that one could identify a variety of branching paths allowing "what if" scenarios to be built up. Despite the empirical evidence of failure in planning in areas such as teacher training and medicine, it is not possible to plan without at least some perception of the various options and developing trends in the workforce as a whole. However, there are only a few centers of expertise in Britain. The Institute of Manpower Planning at Sussex University, which specializes in medium level forecasting, organizational or company manpower planning; and the Manpower Research Group at Warwick University which has a more "macro" approach forecasting for the U.K. labor force as a whole are the two key groups working in this area.

However, SLATER suggested a decade ago that it is possible that the strategies and methodologies of other occupations are not helpful in Library and Information Service (LIS) manpower planning, as the context and structure of the LIS community is often different. Thus the variety of different kinds of organizations employing information workers and the lack of any centralized authority with the right to control and advise all of them cam build up immense difficulties, to the extent of being unable to even identify how many people actually work in the Library and Information profession as we know it. Indeed, much of the work of the 1980s has been concerned with answering these basic questions (MOORE, 1984, 1985).

SLATER put forward some key recommendations for action in the area of manpower planning, of which the first was the vital need to clarify the aims and establish the goals of the profession. It is thus interesting that one of the more exciting strands of the 1980s was the theoretical work undertaken by Cronin, Lewis, and others in identifying this very aspect of the emerging profession. Thus, a detailed examination of the function of the information profession needs to continue if we are to plan effectively for the future.

The Planning Context

Library and Information work is a marginal profession even in an "information society" (SLATER, 1979; TAYLOR, 1979). Demand in terms of overall numbers will fluctuate with and reflect the wider economic and industrial trends and conditions. The nature of demand will be affected by the type of skills required; geographical bias; organizational bias; developments in government policy; new technology; and demographic, social and economic change. It is thus clearly preferable to forecast the contexts in which the profession may operate in the future and an examination of the general economy of the U.K. in 10 or 20 years time would give an idea of industrial development. Manpower planning in the LIS is thus a reactive process based on what is happening in other occupations and the industries and interests we serve.

SLATER's second premise was that a far more flexible attitude was necessary in the whole area of manpower planning. Thus most forecasts made in the affluent 1960s did not anticipate for the economic slump nor the effect of it on such a labor intensive occupation. Instead damage was done by predicting a need for more library workers in the 1970's, and an insufficient supply of suitably qualified people. Now we can recognize this as being an over optimistic and naive assumption at the time, for the economic, social, and technical changes far outstripped developments in the profession. However, it is also clear that in the 1980s over-pessimism is the greatest danger, for present trends are developing quickly.

The Information Society

Society is changing from an industrial to an information based economy, and in an analogous fashion, as the development of machinery transformed society during the industrial revolution, so today microelectronics has created the information sector. Technological change and a dramatic fall in unit costs has meant that information technology can be installed for little capital investment. Daniel Bell's Post-Industrial Society has therefore arrived, with some caveats. A direct effect will be an increase in the significance of information and information handling and overall the trend will be an increase in the number of information related jobs:

> Information which in essence is the analysis and synthesis of data, will unquestionably be one of the most vital corporate resources in the 1980's. Information will be recognized and treated as an asset. The corporations that excel in the 1980's will be those that manage information as a major resource (DIEBOLD, 1979).

It was clear by the end of the 1970s that the implication of a post-industrial society were becoming crucial to any planning model for the library and information workforce (LANE, 1983). It was assumed that information services would fare much better in a more people oriented and service motivated post-industrial society. Libraries will, of course, need to adapt to the different emergent needs but the future looks brighter. This may be an over-optimistic view, but it provides a balance to counteract the other more pessimistic ones that the workforce planners of the 1970s were promulgating. In Britain, this sector is emerging slowly and in an uncoordinated way, with little public awareness or political emphasis.

The Technical Change Centre looked at the implications of the information society on employment opportunities.

> "[T]he Census and Labour Force Survey Data show employment in information industries to be growing at the expense of non-information industries which have in fact declined. Similarly, information occupations have increased at a greater rate than non-information occupations which have in fact declined during the late 1970s and early 1980s.
>
> The analysis shows that within the broader information environment there has been a fairly long-run increase in the number of jobs available to persons who are primarily concerned with the generating; gathering; storing; manipulating; retrieving; transferring and disseminating information. Although these activities involve a wide range of occupations in most sectors, it is useful to think of new jobs created by information technology as being susceptible to colonization from existing occupations (GLEAVE, ANGELL, and WOOLLEY, 1985).

However the information explosion will also cause many problems for society.

> "[T]he popular mythology that sees the avalanche of new information technologies as heralding a new democratic, egalitarian age is little more than a cruel hoax -- the product of marketing hype or self-delusion. The distribution of the benefits flowing from the new technologies will widen the information gap between rich and poor. The transformation of information into a commodity traded in an unregulated market place will mean that the poor will simply not be able to afford

> access to most of the new technologies or their software" (GANDY, 1982).

and,

> "In a strongly technology based culture there is always a tendency towards a dichotomy between those who understand its nature and workings and those who merely push the buttons.... We may be faced, not with a two culture phenomenon as such, but with a sharp distinction between the few who know and the many who do not" (KING, 1984).

Such development may be divisive and keep in check our enthusiasm for the information society and its potential benefits. Nonetheless, opportunities for information managers are created by the very need to overcome the problems generated by the development of an information society, as there is a clear need to allow the information poor and technically naive to survive in the new society. The development of public information and advice networks over the past 15 years is a response to this, and result in a new area of growth for the professional information worker.

Economic Changes

It is very clear that the levels of financial resources within the public sector will determine the overall rate and scale of development of libraries and information services generally (MOORE, 1984), with a concomitant link to the levels of the workforce.

> "More than half of special library staff are in one way or other in public sector organizations (i.e. local government; national libraries; government departments; public corporations). Since public and most academic are supported by public funds, it can be estimated that approximately 89% of staff in libraries in the United Kingdom are paid directly or indirectly, through public funds" (EAST, 1983).

Within the broad envelope of public sector funding, local government finance is particularly important, as local authorities are responsible for the development of public libraries; libraries in schools; and until recently, libraries in colleges and polytechnics. These account for 63% of all the posts for qualified librarians and information workers (MOORE, 1985). Other sectors are equally dependent on central government finance; universities, national libraries, and some special libraries account for about 25% of qualified staff in the library and information market.

The overall size of the market for librarians and information workers has thus increased along with the levels of

public sector finance. During the 1960s there was a growth in the public sector, which then began to decline during the 1970s oil crises with severe restraints on local government spending. At the end of the 1970s, the change of government and the resulting emphasis on monetarist economic policies brought restriction in public expenditure as a whole causing the employment market in the LIS field to decline.

A new dimension has been added with the publication of a number of different government policy documents. The Information Technology Advisory Panel report, MAKING A BUSINESS OF INFORMATION; the Department of Trade and Industry GUIDELINES ON TRADEABLE INFORMATION; and the recent Green Paper on the funding of Public Libraries; all stress a new entrepreneurial attitude to the trading of information. The manpower planning implications of such a change will be major in terms of training, recruiting, selecting, and exploiting staff.

The Boundaries of the Workforce

In response to, and driven by, these broad changes, information work has been expanding in recent years, opening up new job opportunities for the library and information workforce. Thus librarians as a professional group are becoming absorbed by a much larger group of information oriented workers who may not necessarily identify with the traditional ideologies of librarians. Blaise CRONIN suggests that "the task facing the library/information profession is to interpret the significance of this displacement in economic activity, and to devise appropriate manpower planning strategies."

Librarians must continue to meet the needs of the traditional markets, but must also recognize that they need to extend their influence to the emerging information society, if they are not to remain an occupational group which will continue without much competition to provide the services to traditional institutions with a low growth rate. Outside these traditional institutions there will exist a rapidly changing information environment full of opportunities which could be seized.

Demographic Changes

National population and workforce projections provide factors or variables that can be crucial in the planning of the LIS workforce. This is particularly true in a service profession where the driving force for development may be outside our control. The factors used may vary in different sectors of the library profession; thus demand for school librarians will be closely linked to the birth rate, and special libraries will be linked to industrial growth.

However, at the broadest macro level the demographic shifts in the workforce inputs into the LIS profession, and this has been changing fairly dramatically over the recent decade.

Student Numbers in Higher Education

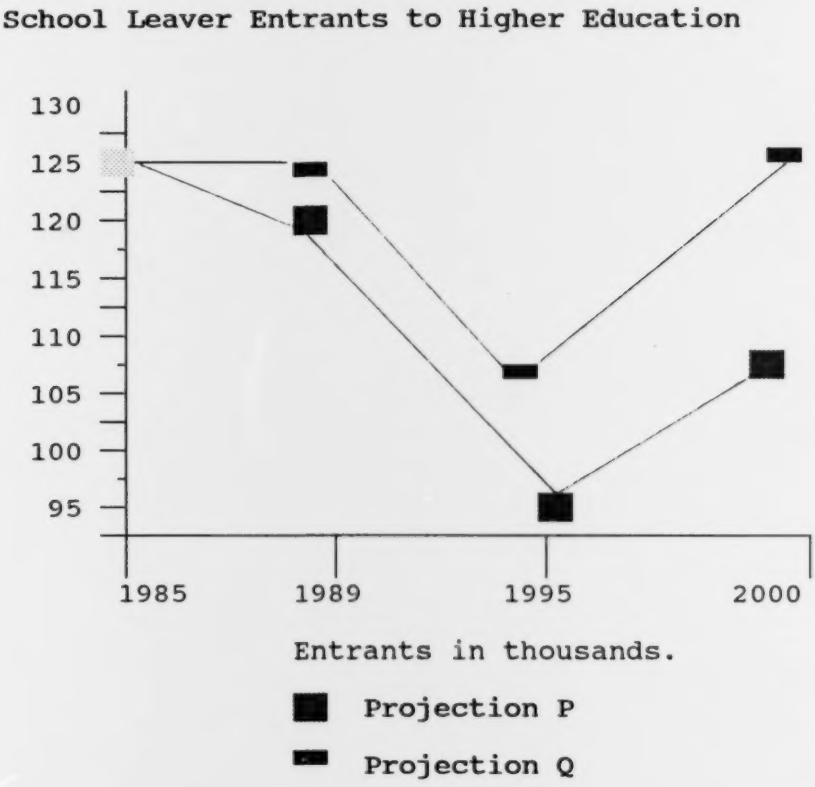
A service profession such as information work, that is totally dependent on skilled manpower must look to the major demographic shifts to plan for the future, and the projections of qualified manpower into the year 2000 are bleak for personnel based service industries.

Population Change and the U.K. Economy

There were dramatic peaks in the U.K. birth rate in 1965 and 1982, and a major trough in 1970. This has led to a series of policy initiatives in higher education during the 1980s. It is very clear that a major peak took place in higher education student numbers in the 1980s; and that the number of school leavers will decline rapidly until the mid-1990s. This decline has been of major concern to both the U.K. government and the higher education planners. It is now starting to be of major concern to industry and the professions. A shortage of skilled manpower will be a key factor until the end of this century, and the information professions are as yet unaware of the problems facing them.

The demographic curves suggest that there will be a 30% reduction in the school leaving population by 1992, and that this will slowly improve until the turn of the century, when school leaving totals will reach the levels they are now at. A profession such as Library and Information Studies, totally dependent on a highly qualified workforce will need to be crucially interested in higher education rates if it is to plan staffing levels for the future.

Graph of U.K. School Leavers



The Provision of Higher Education

It is, of course, difficult to predict how many school leavers will go on to higher education, but the Department of Education and Science has been grappling with the issue for some years. Clearly, the provision of higher education is set by government policy which indicates the proportion of school leavers which it thinks ought to go on to higher education by making places available. These decisions could be based on manpower planning, although the government tends not to make use of such an approach, feeling unable to project such demands far enough ahead.

The Robbins report, the main policy document in higher education until the 1980's, felt that "courses of higher education should be available for all those who are qualified by ability and attainment to pursue them and who wish to do so." However, a shift in policy was indicated within the Government Green Paper which suggested that "courses of higher education should be available to those who can benefit from them and wish to do so." Nonetheless, until recently, student demand in different areas, subject to a broad discipline steer from the higher education

funding bodies, was the main planning mechanism within higher education. The setting up of the National Advisory Body for Public Sector Higher Education, and a greater level of political constraint on the University Grants Committee; leading to the 1988 Education Reform Act and the Polytechnic and the University Funding Councils is resulting in the government steer on student numbers in engineering, technology, science and business is very overt; humanities and social sciences are attracting less government approbation.

The period up until 1985 saw a steady growth in student numbers in higher education, linked to the growth in the school leaving population. The down turn in school leavers was initially seen by government as implying a 30% reduction in higher education provision -- the equivalent of axing 5-6 universities or polytechnics by 1992.

A succession of government reports, culminating in the 1987 Higher Education White Paper slowly modified these figures. It was clear that there were some interesting social forces at work, resulting in more school leavers opting and becoming qualified for higher education, a growth in those mature students who had missed out on higher education the first time around, and a growing demand for part-time modes of access to higher education. All these factors were forcing the Age Participation Index, that is the proportion of school leavers who attend higher education, from a very low 11% to a high of some 20% by the turn of the century. At the same time, the Qualified Participation Index, the proportion of qualified school leavers who go into higher education, will be affected by grant positions, employment prospects, and the income earning potential of higher education.

The reduction in students in higher education may thus be rather less, and possibly even negligible because of these factors. Two projections, a worst case and a best case are now presented by government, now modifying figures upward.

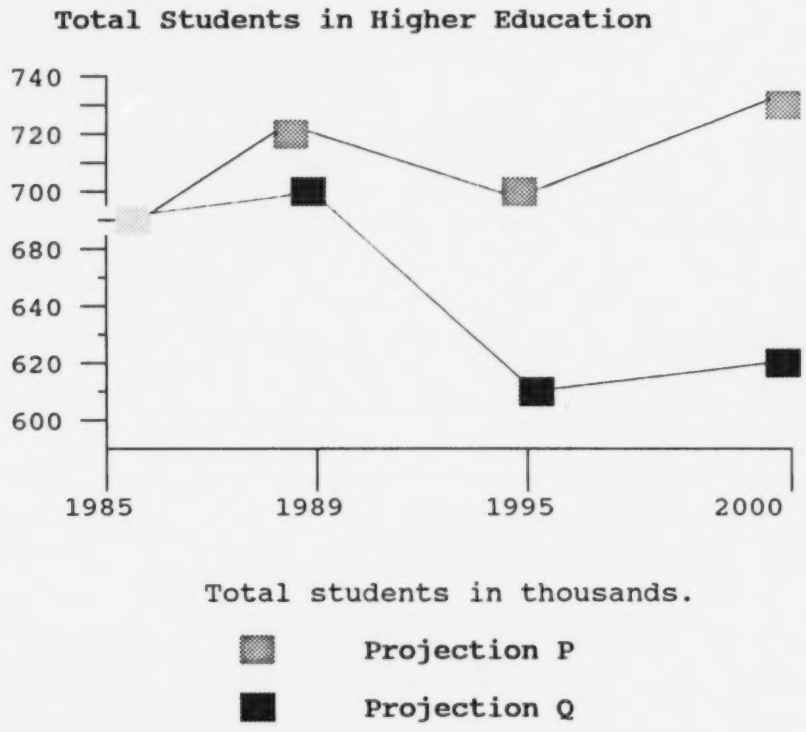
Social Mobility and Embourgeoisement

One crucial factor has been the slow process of embourgeoisement in the U.K. society. Social class is an influential factor in the take up of higher education, with half the entrants into HE come from social classes 1 and 2. While the overall birth rate has decreased, the birth rate in social classes 1 and 2 has increased from 17% in 1963 to 30% in 1981.

The Department of Education and Science (DES) is working on the assumption that the proportion of 18 year olds in classes 1 and 2 will rise from 28.5% in 1981 to 34% in 1999. It is uncertain whether this increased growth rate is a product of higher fertility rates, or an increase in middle class occupations which seems to have followed a 4% rise in non-manual occupations.

This, of course, increases the numbers of school leavers who are able and can benefit from higher education.

Graph of U.K. Higher Education Numbers



Graduate Demand in the 1990s

The Institute of Manpower Studies Survey of Graduate Supply and Demand (Institute of Manpower Studies, 1988) suggests that a degree will continue to be an extremely marketable commodity. The report is aimed at employers, advising them to start planning recruitment strategies for the 1990's as demand is going to be so much in excess of supply. Already 1 out of 4 British companies are reporting labor shortages, which are restricting output. The decade will end on an all time high for graduate employment opportunities, and this is reflected in starting salaries which averaged L900.00 in 1987. Particular growth areas are in management education with a strong pressure to catch up with overseas competitors. Only 25% of British managers presently have degrees compared with 60% in France and West Germany and more than 75% in Japan and the U.S. The report calculates that 20% more graduates will be needed by the year 2000 which is equivalent to a growth of 2% per year.

Internal factors for Inclusion in Our Forecasting

As well as the broad macro aspects of workforce planning, there are a variety of aspects Margaret SLATER regarded as internal. These include: age, to ensure a balanced age structure and to predict future levels of retirement and marriage; gender, important when considering wastage rates; fertility; specialization within the profession; grading or promotion structures; qualifications, type and level; career or promotion structures; skills, the level and type necessary in various sectors and at different levels; geographical distribution; turnover; wastage and changes in professional practice and work style.

The Beginnings of a Manpower Planning System

Concern for workforce began in 1960s and started a long process of trying to ensure a balance between the supply and the demand of librarians and information workers. Between 1968 and 1978, a considerable amount of library manpower planning work took place in the U.K., with increasing sophistication of methodologies and techniques.

Surveys were carried out by the Office of Scientific and Technical Information (OSTI) in 1965 to collect factual information about the workforce from employers, but the response was rather low.

This was followed by a study of training requirements in libraries by the Postgraduate School of Librarianship and Information Science at Sheffield University. This studied the characteristics of existing personnel and the types of work they were required to undertake. The study isolated four main categories of information work -- production, development and design, applied research, and background research. Most of the time information workers would be taken up with production; however, the report stressed the need for information workers to be involved with research and the development of information science generally. This could then be compared to the content of the existing courses in librarianship. Qualitative data were collected from the Sheffield Manpower Project -- exploring the characteristics of librarians and information workers and the requirements of the posts they filled. This collected an enormous amount of information about the workforce and since then several other pieces of research work have been undertaken at the University of Sheffield.

About the same time a joint committee of the Library Advisory Councils (LAC, 1968) was set up to study the number of qualified librarians likely to be required in the foreseeable future, and the arrangements for their training. This had considerable influence in the development of librarianship. One of the major findings was that there would be a major over-supply

of librarians if the expansion of places at library schools was to continue at the present rate. Consequently, an instruction was given to limit the number of places.

The major problem which had faced all of these studies was a lack of reliable statistical information about the library and information workforce. As a result, the DES started to collect data to produce information which could be fed into the overall manpower planning system. As well as carrying out a survey of library school students, the DES decided to do a **national survey** of the library workforce. The first census was carried out in 1972 with questionnaires being sent to over 5500 libraries. It provided an invaluable database showing the age structure, distribution; wastage rates and educational characteristics of the respondents. The census was repeated in 1976 and 1981. Unfortunately, it had to be abandoned as part of a reduction in the DES Statistics Branch.

By 1984 Nick MOORE was able to produce a comprehensive and detailed analysis of the information workforce, using the DES census data and making some long term projections as part of the beginnings of some "what if" scenarios (MOORE, 1984). This was followed by his analysis of the traditional markets (MOORE, 1985) and the emerging markets (MOORE, 1987). This work has now been rounded off with his analysis of the impact of information management on the employment workforce (MOORE, 1988). These seminal pieces of research are analyzed in some detail in this review, for their impact is crucial.

At the same time, the Technical Change Centre (GLEAVE, 1986; ANGELL, 1987) were undertaking research into the impact of information technology on the ways in which the market for information workers will develop.

> "The adoption of information and communications technologies is seen to be leading to a demand for a new kind of information worker combining the skills and qualities of several different professions" (ANGELL, 1987).

Future Research on Manpower Education and Training

During 1987, the British Library Research and Development Department identified manpower planning, education and training as an area of specific funding for research. This followed specifically the UGC and National Advisory Body Transbinary Group Report on Librarianship and Information Studies, which identified a need for greater research in this area; the earlier Library and Information Services Council discussion papers on Library and Information Work in a Changing Environment; Basic Professional Education for Library and Information Work; and Training for Library and Information Work; and the whole range of macro planning issues that have been raised in this review.

The Manpower, Education and Training Working Group set up by the British Library Research and Development Department identified some key priority areas.

Size, structure, and nature of the workforce

It was agreed that studies on the emerging markets were necessary to identify growth rates and pinpoint the areas in which new posts might be likely created in the future. At the same time, it was felt that the employment destinations of traditional librarianship graduates must be mapped in comparison with more information based courses. Research was also important on the issue of the professional versus the non-professional staffing ration; the career profiles of Senior LIS personnel; and the advantages and disadvantages of mature entrants and minority groups to the profession.

Continuing education and training

The LISC reports had raised concerns over the deficiencies in continuing education and this was felt to be an important research area, along with the new skills and abilities that would be required as individuals' careers progressed. Linked with this was the issue of problems in induction training that were becoming more clear as initial education became more generalized and training needed to become more job-specific.

Allied to these areas was the still crucial issue of curriculum development in LIS schools and an examination of ways of delivering education and training, particularly the use of distance learning.

Following these broad strategic issues requests for bids for research were sent out to the professional community, and a wide variety of research programmes were submitted and subsequently funded. The results of these will be disseminated as the research in the various areas comes to fruition.

Monitoring the development of the library and information workforce

One of the pieces of research that the British Library is funding under the Manpower, Education, and Training working group is a project to Monitor the Development of the Library and Information Workforce in the U.K. This is being undertaken at Brighton Polytechnic, and parallels a longitudinal study being undertaken at Birmingham Polytechnic, also funded by BLRDD, looking at the career developments of a nationwide cohort of students graduating from LIS departments in 1988.

It was felt by the research teams involved that Britain has an enviable record of achievement in the field of monitoring the

development of the library and information workforce. Early work by the Arts and Libraries Branch of the Department of Education and Science and by OSTI laid a firm foundation (BROOME, 1973) which was built on with the development of the Census of staff in librarianship and information work carried out in 1972, 1976, and 1981 by the Department of Education and Science (DES, 1975; 1978; 1982).

The result of these endeavors is a body of data which now makes a very significant contribution to our understanding of the development of the library and information workforce. Recent work by two researchers working separately demonstrates the value of the time series data now available (East, 1983, 1984; Moore, 1986). Furthermore, the data has been used extensively by the recent Transbinary Group when formulating policy in this area (Transbinary Group, 1986).

The DES has announced that it will not be possible to carry out any further censuses, and despite various efforts, no other body has come forward to fill the gap. The result is, an important asset -- in the form of time-series data -- is rapidly depreciating at a time when its value could be enhanced greatly through a continuation of the series.

This situation brought forth from the Transbinary Group the following recommendation:

> "If manpower forecasting in this increasingly diffuse area is ever to be solidly and factually based, the DES Census must be improved and continued to provide a reliable and continuing body of data which will preclude the need for each and every forecasting exercise to go back to square one. We therefore recommend that the Office of Arts and Libraries and the Department of Education and Science should provide the resources to enable the Census to be continued and enlarged, and that its coverage should be extended to include the fullest possible range of libraries and information services (paras. 3.3; 3.4).

The cost of going back to square one can be seen from recent exercises carried out in Australia nd the U.S.A. (King Research, 1983). Not only were these very expensive in financial terms, but the lack of time-series data seriously limited the scope of their findings.

If we in Britain are to avoid the situation experienced by policy makers in Australia (Bourne, Hill, and Mitcheson, 1982) and in the U.S.A. -- and in most other countries -- we must do something soon to re-activate or to replace the DES Census. The

information will, without doubt be needed in the future. Librarians and information workers operate in a very volatile employment market and future policy responses will need to be informed by reliable and detailed information about trends and developments.

The DES Census

The Census performed a valuable function, collecting detailed information about the size and structure of the library and information workforce. The value of the information grew exponentially with each successive Census as the time-series data made it possible to identify trends and developments.

The Census has not, however, been devoid of criticism. Its coverage of established employment, particularly in the public sector, was good, but it was recognized to be less effective at collecting data about the emerging market. Further, the data collected was complex, calling for considerable efforts on the part of those completing the returns. Significant elements in the data set have not been used, and could be deleted from further exercises.

On a more fundamental point, the Census fails to provide the information needed for forecasting levels of supply and demand. It omits to collect information about the rates of wastage, and re-entry into the profession, and thus makes prediction extremely difficult.

The UNESCO Guidelines

In 1984-85, UNESCO commissioned a set of guidelines for workforce surveys in librarianship (MOORE, 1986). These Guidelines have been designed to collect data that will identify the size and nature of the workforce -- and thus carry out the function of a census. The guidelines do, however, take things further than that. By collecting information about jobs as well as about people, and about flows into and out of the workforce, it is possible to produce basic forecasts of future levels of supply and demand.

The Guidelines have been tested and shown to be capable of relatively easy operation at fairly low costs. As such they offer a viable mechanism for filling the gap left by the demise of the Census.

Aims and Objectives

The main aim of the British project is, therefore, to monitor the development of the library and information workforce in Britain using the UNESCO Guidelines. Within the overall aim, therefore, the project has the following objectives:

1. To modify the Guidelines so that they produce results which are compatible with those of the DES Censuses;

2. To identify all employers of librarians and information workers, whether in the established or emerging markets;

3. To collect and analyze data on the library and information workforce, on the jobs they occupy, and on the employers' expectations of future growth;

4. To produce a report setting out the basic statistics and a commentary identifying significant trends and likely future developments.

Scope and Methodology

The basic methodology for the study has involved designing a job analysis questionnaire to identify the manpower resources in libraries and information centers. The questionnaire has been used as the main data collecting instrument, supplemented by information gathered from interviews with librarians and information managers.

The questionnaire is based on the pre-tested UNESCO Guidelines for workforce surveys (MOORE, 1986). (An example of the questionnaire is included at the end of the text.) This research will be the first survey to use the Guidelines in Britain, as they have been used exclusively in developing countries up to now. As a result, the design and wording of the questionnaire has been carefully revised to render it appropriate for use in British libraries, and also to ensure its compatibility with the results of the previous DES censuses. This process has involved the deletion of some parts of the questionnaire, and also the addition of further questions to extend coverage of the survey to libraries or information centers in the emerging employment market.

In conjunction with designing the questionnaire, it was necessary to build up a complete mailing list of libraries and information centers in Britain. At present we have managed to identify a total of 2500 employers in Britain by using the following directories:

* Libraries in the United Kingdom and the Republic of Ireland, 1988;
* Libraries in Colleges of Further and Higher Education in the U.K., 1987;
* Directory of Medical and Health Care Libraries in the United Kingdom and Republic of Ireland;
* ASLIB Mailing List;
* ASLIB Economic and Business Information Group Membership Directory;

* Information Managers in the Pharmaceutical Industry: List of Members;
* Arlis Directory, 1987.

The overall coverage of the survey has been extended to try and include the fullest possible range of employers in the emerging employment markets. To identify these new sectors of the market a technique was used which has recently proved successful in another study of this market segment (MOORE, 1987). This involves scanning all sources of appropriate job advertisements to identify employers.

School libraries have been initially excluded from the survey, although they were part of the original UNESCO Guidelines. This decision was taken after discussions with the professional market. It was felt that for school libraries in Britain, the line of questioning in this particular survey was less relevant and should be tackled by means of a separate, more simplified survey. Most of the questions in the main workforce survey were inapplicable as the numbers of qualified staff in individual school libraries is small. Many school libraries are run by volunteers, by the pupils themselves, by teacher librarians or technicians. Finally, there was no easily available listing of schools which had libraries.

The questionnaire has been tested in a small pilot group of libraries and information centers, to allow any obvious flaws to be detected. This involved interviews and general discussionbs with librarians and personnel officers from the different types of libraries who would actually have to complete the questionnaire, and included the Institute of Manpower Studies, West Sussex County Library, East Sussex, and Beechams Information Unit.

The pilot test proved useful and as a result some parts of the survey were radically altered. It is useful to see how such pilot tests can be used to modify initial lines of development. In the initial questionnaire a question designed to identify the different types of library employers started off as an analysis of library types based on the Standard Industrial Classification with broad headings for the public sector. The aim of the question was to achieve a very detailed identification of library employers including, for example, manufacturing industries, research, and chemical industries. This, however, proved to be inappropriate as in the pilot test Beechams Pharmaceuticals placed itself in all three categories. The end result was to restrict the categories of information unit in this question to broad mutually exclusive groupings, such as public, national, higher education, further education, special or information unit, and other. Detailed analysis was undertaken by indexing at the data input stage. There were also changes in the headings for questions, to ensure simplicity and aid response.

The key intellectual phase of the project will be primarily concerned with an assessment of the data collected from the questionnaire. The design of the methodology is such that the results can be manipulated using a customized database management software package, to obtain a series of simple percentages. The software chosen for this task is a relatively new package called Fourth Dimension, a relational database which has already been very successful in the American MacIntosh market. It is designed to be a tool to create custom information-handling packages for specific applications. It is extremely powerful with a capacity for a maximum of 16 million records. The database can be used in three environments: the design environment, the user environment, and the custom environment. In the design environment, the database is created (setting up the record structure, the files and fields to be used, specifying the way the information is to be presented by creating different layout screens, and finally writing procedures to determine how the data can be manipulated). When the database has been set up it can be tested in the user environment. Finally, the custom environment allows menus, windows, and dialogue boxes to be created.

In this case the layout and structure of the database was designed to match the survey as closely as possible; each field used represented one question in the survey. This made the data very easy to enter directly from the survey forms.

In addition to its capacity for handling information, Fourth Dimension has a number of useful extras. It has a mailmerge facility which allows the creation of a layout screen in the form of a letter positioning the different fields to put in the relevant names and addresses automatically. Also, it can display the results of searches and sorts in graphical form -- allowing the print out of pie-charts, line graphs, scatter graphs, and column graphs.

The results of the survey will give a clear picture of present and future trends in the employment market, the size of the workforce and movement within it, growth rates and demand for posts, and the current number of vacancies for library and information jobs.

The needs of the profession and the output of the training institutions will be compared to see whether the right kind of courses are being run at library schools. It will be possible to stratify libraries by region, type, and discipline to see if particular trends can be linked to the different groups, for example, the demographic characteristics of the professional workforce. Also, the results from the questionnaire will provide a valuable source of qualitative data, age and gender profiles, and an indication of the extent of hierarchies and structures within the profession.

The final stage of the project will be a comparison of the results with existing data from the DES Censuses. This will provide a unique opportunity to study the long term shifts and social changes that have occurred in the employment market, particularly in areas such as the role of women in libraries, and examining how the decision making processes may have changed.

BIBLIOGRAPHY

1. ACTON, Patricia. Alternative Career? Canadian Library Journal, 43 (6) December, 1986: pp. 385-387.

2. ANGELL, Carolyn. Information, New Technology and Manpower. London, British Library, 1987. (LIR Report 52)

3. ALTMAN, Ellen. Estimating the Size of the Job Market v. the Pool. Library Compensation Review, 1 (2) Spring, 1982: pp. 1-2.

4. ANAND, A. K. and Shabad KAPOOR. Manpower for the Library and Information Field in India: A Report on Employment Trends in 1981 and 1982. Annals of Library Science and Documentation, 30 (3-4) September - December, 1983: pp. 85-97.

5. ARMSTRONG, C.J. Employment Criteria in the Library and Information Sector: A British Survey. Education for Information, 4 (3) September, 1986: pp. 191-217.

6. ASHFORD, Richard. Jobs Gone Begging: Personnel Needs & Youth Services. School Library Journal, 31 (3) November, 1984: pp. 19-24.

7. BAILEY, Martha J. Requirements for Middle Management Positions. Special Libraries, 69 (9) September, 1978: pp. 323-331.

8. BELL, Daniel. The Coming of Post-Industrial Society: A Venture into Social Forecasting. New York, Basic Books, 1979.

9. BIDLACK, Russell E. Some Economic and Demographic Realities Facing Library Education. Public Library Quarterly, 4 (1) Spring, 1983: pp. 5-15.

10. BOURNE, V., M. HILL, and B. MITCHESON. Library and Information Work : The Employment Market. 2 v. Library Association of Australia, 1982.

11. BROOME, Max. Library Manpower Planning. Aslib Proceedings, 25 (11) November, 1973: pp. 400-414.

12. BURRINGTON, G.A. Report on the Symposium on Job-Sharing in Libraries. State Librarian, 30 (3) November, 1982: pp. 41-42.

13. CASTENS, Maureen. Census of Staff Establishments and Staff in Libraries of Polytechnic, Higher, and Further Academic Institutions 1983. Library Association Record, 87 (3) March, 1985: pp. 108-109.

14. Chan Thye SENG and Foo Kokl PHEUW. Library Manpower Planning and Development in Singapore -- With Special Reference to Computer Applications in Library and Information Services. Singapore Libraries, 8 (1978): pp. 1-10.

15. CHING-CHIH, Chen, Susan RASKIN and Diane R. TEBBETTS. Products of Graduate Library and Information Science Schools: Untapped Resources? Education for Information, 2 (3) September, 1984: pp. 163-190.

16. CONNOR, H. The Destinations of 1984 Information Technology Post Graduate Students. Institute of Manpower Studies, 1985. (IMS Report No. 109)

17. CONNOR, H. and PEARSON, R. Information Technology Manpower into the 1990s. Institute of Manpower Studies, 1986. (IMS Report No. 117)

18. CONNOR, H. and PEARSON, R. The Labour Market for IT Postgraduates. Institute of Manpower Studies, 1986. (IMS Report No. 118)

19. CONROY, Barbara. Career Developments for Librarians -- Dreams to Realities. Catholic Library World, 57 (3) November/December, 1985: pp. 134-136.

20. CONWAY, Patrick. Student Employment, 1982. Library Association Record, 85 (0) September, 1983: pp. 312-313.

21. COOPER, Michael D. Projections of the Demand for Librarians in the United States. Library Quarterly, 54 (4) October, 1984: pp. 331-367.

22. CRONIN, Blaise. The Education of Library-Information Professionals: a Conflict of Objectives? Aslib Occasional Publication 28, Aslib, 1982.

23. CRONIN, Blaise. The Transition Years: New Initiatives in the Education of Professional Information Workers. Aslib Occasional Publication 29, Aslib, 1983.

24. CRONIN, Blaise. Post-Industrial Society: Some Manpower Issues for Library/Information Professionals. Journal of Information Science, 7 (1) August, 1983: pp. 1-14

25. DEAN, John. The Job Market for LIS Diplomats -- A Pilot Study. An Leabharlann, The Irish Library, 3 (2) 1986: pp. 35-41.

26. DEBONS, A. The Information Professional: Survey of an Emerging Field. New York, Dekker, 1981.

27. DEPARTMENT OF EDUCATION AND SCIENCE. Census of Staff in Librarianship and Information Work in the UK 1972. DES, 1975.

28. DEPARTMENT OF EDUCATION AND SCIENCE. Census of Staff in Librarianship and Information Work in the UK 1976. DES, 1978.

29. DEPARTMENT OF EDUCATION AND SCIENCE. Census of Staff in Librarianship and Information Work in the UK 1981. DES, 1982.

30. DIEBOLD, J. Information Resource Management: New Directions in Management. Information Systems, 26 (10) October, 1979: pp. 41-42.

31. EAST, Harry. Changes in the staffing of UK Special Libraries and Information Work in the Decade 1972-1981: A Review of DES Census Data. Journal of Documentation, 39 (4) 1983: pp. 247-265.

32. EAST, Harry. Special Libraries and Information Services and the Development of the UK Information Industry. Aslib Proceedings, 36 (2) 1984: pp. 61-78.

33. FRANKLIN, Ann Y. School Library Certification Requirements: 1978 Update. School Library Journal, 24 (8) April, 1978: pp. 38-50.

34. GANDY, Oscar. Beyond Agenda Setting. Norwood, New Jersey, Ablex, 1982.

35. GLEAVE, David, et al. The Impact of New Technology on the Labour Market and Demands for Information Services. The Technical Change Centre, 1985.

36. GRIFFITHS, J-M. New Directions in Library and Information Science Education. White Plains, NY, Knowledge Industries, 1986.

37. HEIBERGER, Elana H. Hiring During a Freeze: The Statistical Edge. Bulletin of the Medical Library Association, 72 (4) October, 1984: pp. 392-394.

38. HEIM, Kathleen M. and Peggy SULLIVAN. Opportunities in Library and Information Science. Skokie, Illinois, National Textbook Company, 1982. 147 p.

39. HOLROYD, Gideon. The Maryland Manpower Studies. In: Studies in Library Management. Vol 3. Bingley, 1976, pp. 98-134.

40. HUETTEMAN, Lutz. Manpower Training Needs. Deutsche Siftung Internationale Entwicklung, 1985.

41. INFORMATION TECHNOLOGY ADVISORY PANEL. Making a Business of Information. HMSO, 1983.

42. KEITH, Sylvia. Professionally Qualified Working in Non-Professional Posts. Library Association Record, 80 (1) November, 1978: pp. 572-573.

43. KING, A. The Coming Information Society. London, British Library, 1984.

44. KING RESEARCH INCORPORATED. Library Human Resources: A Study of Supply and Demand. Chicago, American Library Association, 1983.

45. KOENIG, Michael E.D. and Stephen T. KOCHOFF. The Merging Role for the Librarian in Data Administration. Special Libraries, 75 (3) July, 1984: pp. 238-246.

46. LANE, Nancy. Librarianship: A Profession in Context. The Library Workforce: Proceedings of a National Conference, Melbourne, 1982. Melbourne, Library Association of Australia, 1983.

47. LAUR, Jonathan D. Recruiting for the Profession. College and Research Libraries News, 45 (8) September, 1984: pp. 388-390.

49. LEARMONT, Carol L. and Stephen VAN HOUTING. Placements and Salaries 1981: Still Holding. Library Journal, 107 (17) 1 October 1982: pp. 1821-1827.

50. LEWIS, Dennis. The Year 2000: Doomsday Scenario. Aslib Proceedings

51. LIBRARY AND INFORMATION SERVICES COUNCIL. Library and Information Work in a Changing Environment: A Discussion Paper. Office of the Arts and Libraries, 1983.

52. LIBRARY AND INFORMATION SERVICES COUNCIL. Professional Education and Training for Library and Information Work. LA, 1986.

53. MANN, Margaret. Library Manpower Planning: A Bibliographical Review. London, British Library, 1981 (BLR&D Report 5614)

54. MELBER, Barbara D. and Steven D. MCLAUGHLIN. Evaluation of a Career Development center Program for Professional Librarians. Library and Information Research, 7 (2) April -June, 1985: pp. 159-181.

55. MOHINDER, Partap Satija. The Plight of Librarians: Avenues for More Jobs. Lucknow Librarian, 15 (3) September, 1983: pp. 93-97. 5 references.

56. MOORBATH, Paul. Library Vacancies 1985-87: A Sideways Look. Library Association Record. 90 (6) June 1988.

57. MOORE, Nick. Library Manpower Planning: A Decade of Progress. Journal of Librarianship, 10 (3) July, 1978: 162-169.

58. MOORE, Nick. Manpower Planning in Libraries. London, Library Association, 1980.

59. MOORE, Nick. The Methodology of Personnel Planning. UNESCO Journal of Information Science, Librarianship and Archives Administration, 5 (3) 1983: pp. 142-148.

60. MOORE, Nick. Developing the Information Workforce. Information Development, 1 (1) January, 1985: pp. 38-44.

61. MOORE, Nick and Elaine KEMPSON. The Size and Structure of the Library and Information Workforce in the United Kingdom. Journal of Librarianship, 17 (1) January, 1985: pp. 1-16.

62. MOORE, Nick. Information Workforce Planning Manual. 2 vol. Acumen, 1986.

63. MOORE, Nick. The Library and Information Workforce: A Study of Supply and Demand. London, British Library, 1986. (BLR&D Report 5900)

64. MOORE, Nick. Forecasting the Library and Information Workforce in the Caribbean. COMLA Newsletter, 46 December, 1984: pp. 3-4.

65. MOORE, Nick. The Emerging Market for Librarians and Information Workers. London, British Library, 1987. (LIR Report 56)

66. MOORE, Nick. The Emerging Market for Librarians and Information Workers in the UK. Journal of Librarianship, 19 (1) January, 1987: pp. 31-40.

67. MOORE, Nick. The Employment Market for Librarians and Information Specialists in the United Kingdom. Journal of Information Science, 13 (6) 1987: pp. 327-333.

68. MOORE, Nick. Information-Intensive Management: The Impact on the Employment Market for Information Professionals. Birmingham Polytechnic and Aslib, 1988.

69. MWACALIMBA, Hudwell. Design for Library Human Resource Development in Zambia: extracts from a Doctoral Dissertation in Library and Information studies Filed with the Graduate Division of the University of California, Berkeley, 1981. Zambia Library Association Journal, 14 (1) June, 1982: pp. 1-23.

70. NIJHAR, Molina and Norma ABU SEMAN. ITM-UNESCO Manpower Survey of Libraries, Information Services, and Archives in Malaysia: 1986. School of Library and Information Science, MARA Institute of Technology (ITM), Petaling Jaya Campus, 1987.

71. PROTTI, D.J. Knowledge and Skills Expected of Health Information Scientists: A Sample Survey of Prospective employers. Journal of American Librarianship, 23 (4) October, 1984: pp. 204-208.

72. REARDEN, D.F. and J.E. ROWLEY. A Question of Quality: How Career Entrants View Their Choice and Their Future. Library Association Record, 83 (8) August, 1981: pp. 379-381.

73. ROBERTS, N. and G. BULL. Professional education and Practice: A Survey of Past Students. MA Information Studies (Social Sciences) of the Postgraduate School of Librarianship and Information Science, University of Sheffield, 1973/4 to 1979/80. Journal of Librarianship, 15 (1) January, 1983: pp. 29-47.

74. ROCHESTER, Maxime K. Library and Information Personnel Planning in Australia. International Library Review, 16 (4): October, 1984: pp. 387-391.

75. ROCHESTER, Maxime K. Librarianship Recruits: Where Do They Go? Aust. Acad. Res. Libr, 12 (2) June, 1981: pp. 122-124.

76. SELLEN, Betty-Carol and Dimitry S. BERKNER, eds. New Options for Librarians: Finding a Job in a Related Field. New York, Neal-Schuman, 1984.

77. SELLEN, Betty-Carol and Susan J. VAUGHN. Librarians in Alternative Workplaces. Library Journal, 110 (3) February 15, 1985: pp. 108-110.

78. SERGEAN, R., J.R. MCKAY, and C. CORKILL. The Sheffield Manpower Project. University of Sheffield, 1976.

79. SLATER, M. Career Patterns and Mobility in the Library/Information Field. Aslib Proceedings, 30 (10-11) 1978: pp. 344-351.

80. SLATER, Margaret. Ratio of Staff to Users: Implications for Library-Information Work and the Potential for Automation. LISA, Occasional Publication No. 24. (BLRD Report 5627).

81. SLATER, Margaret. Manpower, Forecasting, and Planning. Journal of Information Science, 1 (3) August, 1979: pp. 131-143.

82. SLATER, Margaret. Manpower Planning and Research. Aslib Proceedings, 32 (10) October, 1980: pp. 381-386.

83. SLATER, M. Alternative Careers for Library-Information Workers. Aslib Proceedings, 3 (6) 1984: pp. 277-286.

84. SLATER, M. Careers and the Image: 1984. S.F.C.L.G. News, 65 January, 1985: pp. 5-13.

85. SLATER, M. Careers Guidance and Library/Information Work. London, British Library, 1986. (LIR Report 48)

86. STONIER, Tom. The Wealth of Information. New York, Thames, 1983.

87. Student Employment 1983. Library Association Record, 87 (1) January, 1985: pp. 5-6.

88. Taylor, R. S. Reminiscing about the Future: Professional Education and the Informaton Environment. Library Journal. 15th September, 1979, pp. 1871-1875.

89. TRANSBINARY GROUP. Report of the Transbinary Group on Librarianship and Information Studies, 1986.

90. WARD, Patricia Layzell. A Lifetime in Librarianship? The Changing Career Patterns of Qualified Librarians in the UK, 1935 - 1900. In: Studies in Library Management. Vol. 3. Bingley, 1976: pp. 77-97.

91. WATSON, W.M. Diversity of Employment of Librarianship Graduates. UC&R Newsletter, 4, June, 1981: pp. 5-7.

91. WEEKS, C. The Need for Integrated Management of Information. Journal of Information Science, 12 (6) 1986: pp. 283-287.

92. WHITE, Brenda. The Impact of Library and Information Studies Education on Subsequent Career Progression. London, British Library, 1986. (British Library Research Paper 6)

93. WRIGHT, Tony. A Discourse on Issues: An Exploratory Study of the Implications of Information Technology for U.K. Library and Information Work Manpower Planning. London, Aslib Research and Consultancy Division, 1980. 190 p. (BLRD report 5656)

Appendix. BLR&DD Research Project

Workforce Surveys of Libraries and Information Services in the UK

[title page]

Survey of Employing Organizations

The information collected in this survey will be used to monitor the development of the Library & Information workforce, and identify future manpower needs and general trends in the UK. No individual or institution will be named in the report.

Explanatory notes and definitions are given on the back pages of the questionnaire, please use them if you have any problems. If you have any further questions, please contact:

Felicity Bray Tel: (0273) 606622 Ext. 300
Library & Information Studies Department
Brighton Polytechnic
Falmer, BRIGHTON, East Suxxex BNI 9PH

Please return the complete questionnaire not later than **31st October 1988.**

Name of Library or Information Unit _____

_____

(p.1) **BLR&DD Research Project**

1. **TYPE:** (Please circle as appropriate, refer to notes on the back pages if necessary)

Public Library
National Library
HE College Library
FE College Library
Special Library or Information Unit
Other (please specify)

2. STAFF EMPLOYED:

2.1	Professional	Clerical
Please give the total number of LIS staff employed on 1st October 1988.		

(Allocate numbers according to the level of posts held rather than the qualifications held. For example a qualified librarian working in a clerical post should be shown as clerical.)

(p. 2) BLR&DD Research Project

2.2

Age and gender of professional LIS staff:
Please indicate for male and female professional staff, the numbers in each of the following age groups on 1st October 1988.

Age	Male	Female
16-19		
20-29		
30-39		
40-49		
50-59		
60-65		

2.3

Age and gender of clerical LIS staff:
Please indicate for male and female clerical staff, the numbers in each of the following age groups on 1st October 1988.

Age	Male	Female
16-19		
20-29		
30-39		
40-49		
50-59		
60-65		

(p. 3) BLR&DD Research Project

3. DEPARTURES:

Please give the numbers of LIS staff who have left their jobs in the last 12 months. (Do not count promotions or job changes within the organization. Allocate numbers according to the level of the posts held.)

	Professional	Clerical
3.1 Departure as a result of death, retirement, or redundancy.		
3.2 Movement to another library or information unit within the U.K.		
3.3 Movement to jobs outside the LIS sector, or into Higher Education, or outside the country.		

3.4
Total numbers leaving.

(p. 4) **BLR&DD Research Project**

4. **ARRIVALS:**

Please give the numbers of LIS staff who joined the service in the last 12 months. (Do not count promotions or job changes within the organization. Allocate numbers according to the level of the posts held.)

4.1	Professional	Clerical
The number of newly qualified staff joining from Higher Education, having completed courses in Library and Information studies, or a related subject in the last 6 months. (Do not count existing employees who have been attending training.)		
4.2 **Arrivals from another library or information service in the UK.**		
4.3 **Arrivals from jobs outside the library and information service in the U.K.**		
4.4 **Total numbers joining.**		

(p.5) BLR&DD Research Project

5. VACANCIES:

5.1	Professional	Clerical
Please give the numbers of LIS posts which were vacant on 1st October 1988, which it is planned to fill <u>within the next 3 months</u>. (Please include temporary posts.)		

6. REDUCTIONS:

6.1	Professional	Clerical
Please give the number of LIS posts which have been deleted from the establishment in the last 12 months.		
6.2 Please give the number of LIS vacancies which have been frozen in the last 12 months as part of some cost cutting exercise.		

6.3 Please attempt some some estimation of the number of LIS posts which are likely to be deleted from the establishment, including the number of vacancies which are likely to be frozen.

In the next 12 months		
In the next 5 years (from 1988 to 1993)		

(p. 6) BLR&DD Research Project

7. GROWTH:

7.1	Professional	Clerical
Please give the numbers of new posts which have been created for the LIS workforce in the last 12 months, <u>including any vacancies which have become unfrozen.</u>		

7.2 Please estimate the numbers of new LIS posts which are likely to be added to the establishment:

In the next 12 months		
In the next 5 years (from 1988-1993)		

Please tick this box if you would like to receive a summary of the results of the survey. ☐

Please tick this box if you would like to answer a supplementary questionnaire on the development of the workforce. ☐

THE INFORMATION PROFESSIONALS: A STUDY IN AN EMERGING INDUSTRY

Gale MOORE
Department of Sociology
University of Toronto
Toronto, Canada

Introduction

This paper presents preliminary results of an empirical study of the professionals working in the information industry in Canada. This is an emerging industry in Canada and to date there is no information on the firms that comprise the industry nor on the industry's labor force. The larger project, from which the data are drawn, is concerned with testing some of the propositions that emerge from the literature on post-industrial and information society.

For the purpose of this project we have attempted to locate an 'ideal-type' post-industrial industry suitable for a study of work in an advanced industrial economy. One proposition that emerges from the literature of post-industrialism is that knowledge is a strategic resource in a post-industrial economy. We, therefore, focus on those with professional qualifications currently employed in this industry. We look specifically at the types of professionals employed in this industry and at the perceptions of the senior executives and the professionals on the importance of post-secondary qualifications in this labor market.

Why the Information Industry?

As the information industry does not at the present time exist as a distinct industry in the official industrial classification it is necessary to explain both why this 'industry' was selected and how it has been defined.

We take as the point of departure the post-industrial thesis, most systematically elaborated by Daniel Bell (Bell, 1973), which argues that advanced industrial economies are undergoing a period of change so profound that they can no longer appropriately be labeled 'industrial'. Post-industrial societies, Bell asserts, are characterized by:

> (1) major structural changes in sectoral distribution, i.e., a change from a goods producing to a service economy;
>
> (2) shifts in the occupational structure with an elite status for the professional and technical class;
>
> (3) a shift in the resource base from financial capital to knowledge (1973, 14).

Bell (1979, 166-167) summarizes the formal properties of the three major social formations -- pre-industrial society, industrial society, and post-industrial society -- as follows:

	PRE-INDUSTRIAL	INDUSTRIAL	POST-INDUSTRIAL
MODE OF PRODUCTION	Extractive	Fabrication	Processing, Recycling
ECONOMIC SECTOR	Primary	Secondary	Services
TRANSFORMING RESOURCE	Natural Power	Created Energy	Information
STRATEGIC RESOURCE	Raw Materials	Financial Capital	Knowledge
TECHNOLOGY	Craft	Machine Technology	Intellectual Technology

The post-industrial thesis has been extended and in part revised by those employing the concept 'information society'. In this perspective, services are replaced by the more narrowly defined information services as the leading economic sector. The demand for information services rather than other services is central to economic growth. The development and diffusion of information technology[1] is considered the base for the economic restructuring predicted (Miles, 1985, 591).

While the theoretical work continues to develop there has been almost no empirical work directed toward the testing of the propositions that emerge from these theories. In part, this can be explained by the fact that official industrial classification schemes, such as the Canadian Standard Industrial Classification, used to organize information on the economy do not permit the identification of an industry that is advanced in terms of the tenets of post-industrialism and information society theories. the industrial classification scheme in use in Canada today, derives, as do the schemes used in the majority of western nations, from the work of an economist, Colin Clark. In a book entitled The Conditions of Economic Progress (1940), Clark characterized the

[1]The term information technology refers to the technical capacity for creating, processing, organizing, storing and disseminating information.

comprised of industries highly dependent on natural resources, a secondary or manufacturing sector, and a tertiary sector of service based industries. In this industrially based scheme, the tertiary sector is essentially a residual category. When the majority of economic activity and employment is in the primary and secondary sectors this scheme succeeds, but as the number of industries that cannot be classified as primary or secondary increases we are left explaining the sector with the greatest variation within the framework of an industrial classification. Attempts to refine the tertiary sector by subdivision are an improvement (eg. Gershuny and Rosengren, 1973; Gershuny and Miles, 1983), but all such schemes continue to conceive of the economy from an industrial point of view. It is important to recognize that all classification schemes embody a point of view which fundamentally affects the way we conceptualize and think about the objects classified; in this case the distribution of industries in the economy. The post-industrialists claim that a major feature of advanced industrial economies is the centrality of knowledge and information and the economic activities that result from their application. As these activities are carried out across the traditional sectors (including the primary sector), it is not possible to disaggregate census data or other official data to extract an 'information' sector.

For this project a series of analytical models which derive from the theories of post-industrialism and information society and a model of the economy that is information based (Porat, 1977) were used to locate an industry in the Canadian economy suitable for testing some of the ideas of post-industrialism. A description of the development of these models was presented at the Canadian Sociology and Anthropology Association Meeting in Winnipeg in 1986 (Moore, 1986). The final set of criteria used to identify the firms that comprise what we have called the 'information industry' are as follows.

> (1) The market position of the firm is based on the commodity nature of information with its consequent commercialization. That is, it is the sale of information; numeric, textual, or graphic, which is central and not the form in which it is packaged. For example, firms that manufacture or market computer disks are excluded, but firms marketing intellectual property, eg. software, sold on a disk or set of disks are included.
>
> (2) Computer and/or technologies are central to the provision of the products and services of the firm.
>
> (3) The type of product or service provided by the firm did not exist prior to the development of computer and communication technologies. This criterion is necessary to exclude those firms which

while now dependent on information technology have produced a similar product without the use of this technology. The newspaper and publishing industry are examples. From the literature on technological change we know that the introduction of new technology is never simply an economic calculus, but is directly bound up with the existing social relations of production of production. The social relations existing prior to the introduction of information technology in long established firms are likely to condition both the way in which the technology is introduced and the outcomes in which we are specifically interested. It would thus be difficult to identify change net of existing social relations and organizational structures.

(4) Only for-profit firms are included. This includes both firms that are privately owned and those that are publicly traded as well as separately incorporated divisions of larger corporations.

(5) The firm is doing some development work in Canada. This is to exclude what are essentially sales or marketing firms whose primary activity is the sale of foreign intellectual property and technology in the Canadian marketplace.

Examples of the types of firms included in the industry are software houses, computer consulting firms, database producers and vendors, and value-added re-sellers. The definition of the industry is by design restricted. We have purposely excluded multinational corporations not doing development work in Canada, nor do we include the information departments of large corporations, government departments, or agencies. This is not problematic in terms of the industry definition, but we do recognize that this does exclude a large percentage of the labor force who would be considered information or knowledge workers/professionals.

The Information Industry

In Canada the majority of firms in the information industry are located in the provinces of Ontario and Quebec, the two provinces which also dominate the economy in terms of industrial production. The population or universe for this study consists of all the firms that could be identified as working in the industry in Ontario. As of August, 1987, five hundred and nineteen (519) firms were identified as meeting the criteria described above.

The information industry is an emerging industry in Canada. The majority of firms have been established since the late 1960s

and the average age of the firms in the sample is 10.3 years. As a developing industry, the information industry is characterized by change; change in both the number of firms in the industry and in the size of the firms. Firms fail, others are bought out, still others expand with buyouts of their own, and new firms enter the marketplace on a regular basis. The majority of the firms in the industry would be considered small in terms of the large manufacturing establishments that have been the location for so many studies in the sociology of work. Approximately one half of the firms identified have less than ten employees. The data presented in this exploratory study utilizes approximately 75% of the data from the sample and is representative of firms of various sizes. The labor force in this industry is also young. The average age of those surveyed is 32.1 years, and the average age of senior executives is 39.3 years.

Who Works in the Information Industry?

One of our first questions concerns the nature of the division of labor in this emerging industry. As post-industrial and information society theories both suggest the importance of knowledge as a strategic resource, we are particularly interested in the educational qualifications of those employed in the industry.

Before we look at the data it should be noted that an analysis of the occupational structure in this industry is problematic. First, job titles are not standardized. The majority of job titles are descriptive of specific work activities carried out in individual firms and are not comparable across firms. Second, the small number of job titles that are standardized, such as programmer, programmer/analyst, or software engineer have incumbents whose educational qualifications, experience, and position in the organizational hierarchy vary widely. Third, with the exception of supervisory or managerial positions, there is little hierarchial information embedded in the job titles used. It appears that at this stage in the development of the industry the division of labor has not been formalized. It is, however, possible to identify the professionals working in the industry on the basis of their educational qualifications, and this is the approach taken in this paper. Table 1 shows the distribution of the labor force by educational qualifications and Table 2 provides a more detailed look at the professionals.

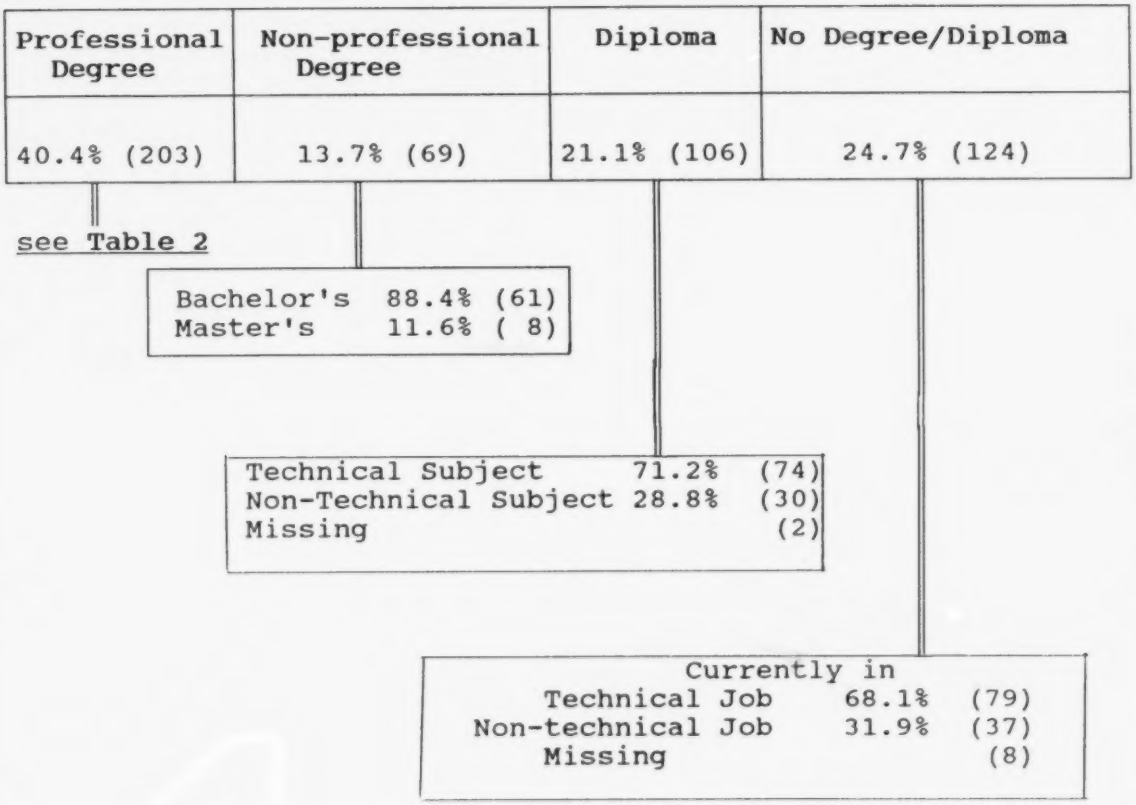
Table 2: Professionals in the Information Industry (N=203)

	Degree			
	Bachelor's	Master's	PhD	Profess. Designation
Computer Scientist (97)	78.4% (76)	18.5% (18)	3.1% (3)	-
Engineer (49)	32.6% (16)	63.3% (31)	4.1% (2)	-
Economist (18)	-	100% (18)	-	-
Accountant (13)	38.5% (5)	7.7% (1)	-	53.8% (7)
MBA (MA in Business) (11)	-	100% (11)	-	-
Teacher (6)	50.0% (3)	16.7% (1)	16.7% (1)	16.7% (1)
Journalist (3)	100% (3)	-	-	-
Librarian (2)	-	100% (2)	-	-
Geologist (2)	-	100% (2)	-	-
Physicist (1)	-	100% (1)	-	-
Psycho-therapist (1)	-	100% (1)	-	-

The Labor Force

Forty and four-tenths percent (40.4%) of the employees surveyed hold professional degrees; the majority with degrees in computer

Table 1: Formal Educational Qualifications of Employees in the Information Industry (N=502)



science[2] or engineering. In an industry which is heavily dependent on computer and communication technology for maintenance of their market position this is not an unexpected finding. However, the fact that more than half of the engineers have a master's degree is significant, given that the bachelor's degree is the basic professional qualification.

The three journalists in the sample are all involved in technical writing and documentation and both the librarians hold traditional library positions in the firms in which they work. The economists, the geologist, and three of the teachers work in firms where there professional background is relevant to the products and services of the firm. The economists, for example, are all located in firms involved in the development of economic databases and/or marketing of economic analyses. One of the geologists is the president of a firm doing analysis and mapping of the earth using data gathered by satellite. Two of the teachers are involved in the development and testing of educational software and a third trains clients in the use of her firm's product. Clearly, the educational qualifications of these professionals are relevant to their current work. However, two of the teachers hold positions in finance and accounting and another is a project manager in a technical area.

The accountants and the MBA's, on the other hand, all hold positions typical of those held by these professionals in other industries. Neither of these professional groups is involved in the technical side of the industry.

Thirteen and seven-tenths percent (13.7%) of the sample have non-professional degrees. This category includes bachelor's and master's degrees in arts, science, music, etc. Their disciplinary backgrounds vary widely. Typical subject specialties include philosophy, biology, geography, sociology, and english. The disciplinary backgrounds of this group do not appear to be particularly relevant to the job activities in which they are currently engaged. Several of the senior executives interviewed indicated that post-secondary education was used as a screening device, helping to reduce the number of candidates to be interviewed. However, less pragmatically, a number also indicated that a university degree was indicative of an ability to set and achieve long term goals, and most important, an indication that the individual has learned 'how to learn'.

---

[2]Computer science professionals are defined as individuals with a bachelor's or master's degree or a doctorate in computer science or mathematics. At the bachelor and master's level the actual name of the degree varies, eg. B.A., B.Sc., B. Comp.Sci., M.A., M.Sc., etc.

Almost one quarter (24.7%) of the sample had no formal education beyond high school and the majority of this group were in technical jobs. These include job titles such as programmer/analyst, software engineer, customer support representative, and technical writer. Sales, secretarial and administrative tasks were considered non-technical jobs. An argument can be made that a number of the sales positions should be included as technical jobs, and this would make the percentage of technical jobs still higher.

Finally, 21.1% have community college diplomas. Community colleges in Ontario are post-secondary institutions offering a variety of two and three year diplomas and certificates. the majority of the respondents have technical diplomas in subjects such as computer technology. The non-technical subjects include such subjects as business, secretarial studies, media studies, and graphic arts.

Perception of the Importance of Educational Qualifications

In this section of the paper we focus on the perceptions of computer scientists and engineers; the two major professional groups, on the importance and relevance of professional qualifications for work in this industry. As senior executives in these firms are influential in hiring decisions and/or in determining hiring policies, we will also consider the views of the senior executives on these questions. Senior executives are defined to be top level managers at the presidential or vice-presidential level. In cases where these positions could not be clearly defined from an organizational chart, the advice of the chief executive officer was sought. It should be noted that the senior managers who are professional engineers or computer scientists will be counted twice, once as a member of the profession and again as a senior executive.

First, let us look at the educational background of the senior executives (see Table 3). Over three-quarters (75.8%) of the senior executives in these firms have a degree, and almost fifty percent (48.4%) are professionals. Of the professionals over half are computer scientists or engineers. At this stage in the development of the industry only one of the senior executives has a master's degree in business administration.

Table 3: Formal Educational Qualifications of Senior Executives in the Information Industry (N=62)

Qualification	Number	Percentage
Professional Degree	30	48.4%
Computer Science	10	
Engineering	8	
Economics	4	
Accounting	4	
MBA	1	
Teaching	1	
Geology	1	
Psychology	1	
Non-Professional Degree	17	27.4%
Diploma	4	6.5%
Computer Institute	1	1.6%
No Degree/Diploma	10	16.1%

Minimum Education Required

With the exception of the senior executives all employees in the industry were asked what they considered to be the minimum level of education really required to perform their current job. Table 4 gives the responses of the computer scientists and engineers to this question. The majority of computer scientists (59.8%) and almost half (49.0%) of the engineers feel that an undergraduate degree is the minimum education required. However, 25.8% of computer scientists and 20.4% of the engineers feel that their job could be done with a community college education or high school education. Ten percent (10.3%) of the computer scientists and just over sixteen percent (16.3%) of the engineers feel that their work could be done by those with less than a high school education.

Table 4: The Minimum Level of Education Required to Perform Current Job

Profession / Education	Computer Scientists (N=97)	Engineers (N=49)
Less than High School	10.3% (10)	16.3% (8)
High School	3.1% (3)	6.1% (3)
Community College	22.7% (22)	14.3% (7)
Undergraduate Degree	59.8% (58)	49.0% (24)
Graduate Degree	2.1% (2)	12.2% (6)
Other	2.1% (2)	2.0% (1)

Best Education

All those working in the industry, including the senior executives, were asked what they considered the best educational qualification for doing their current job. Here the results shifted toward higher education. An undergraduate degree is considered the best education by 72.9% of the computer scientists, and 75.5% of the engineers, but only 39.9% of the senior managers feel that this is the best education. Forty-one percent of this group consider a graduate degree to be the best education (see Table 5).

Table 5: The Best Educational Qualifications and Best Subject Background for Performance of Current Job

Profession	Computer Scientist (N=6)	Engineers (N=49)	Senior Exec's (N=61)
Best Education			
High Schl.	2.1% (2)	0	1.6% (1)
Comm. Coll.	3.1% (3)	6.1% (3)	6.6% (4)
Undergrad. Degree	72.9% (70)	75.5% (37)	39.3% (24)
Graduate Degree	20.8% (20)	16.3% (8)	41.0% (25)
Other	1.0% (1)	2.0% (1)	11.5% (7)
Best Subject			
Comp. Science	75.0% (72)	38.8% (19)	23.0% (14)
Engineering	7.3% (7)	49.0% (24)	9.8% (6)
Business	11.5% (11)	2.0% (1)	36.1% (22)
Other	6.3% (6)	10.2% (5)	31.1% (19)

In terms of the best subject background, 75.0% of the computer scientists feel that computer science is the best preparation for the work they are currently performing. Only 49.0% of the engineers feel that engineering is the best preparation. A full 38.8% of the engineers consider that studying computer science would have better prepared them to handle their current jobs. Eleven and five-tenths percent (11.5%) of the computer scientists think that business studies are the best preparation for their current job, but only 2.0% of the engineers consider this option. Not surprisingly, 36.1% of those in senior management positions feel that a business background would have best prepared them for their current jobs. It may be that technical skills and innovative technical ideas are required to get started in this industry, but as the firms begin to grow the need for business experience is perceived to be increasingly important.

Relevance of Education to Current Job

We are interested in whether professional education is perceived to be relevant to the work that is being done in these firms in the information industry, or whether it is more of a 'credentialing' device; important for entry, but not central to the actual work activities. Close to half (45.3%) of the computer scientists feel that they spend more than 50% of their time on activities for which their education is highly relevant (see Table 6). For the engineers this is considerably lower, with almost the same percentage (46.9%) considering that they spend only 11% - 50% of their time on activities for which their formal education is highly relevant. Over fifty percent (50.8%) of the senior executives, perhaps reflecting their management responsibilities and non-business educational backgrounds, feel that less than 10% of their time is spent on activities in which their formal education is relevant. However, all three groups agree that their formal education was important for getting their first job in the industry (see Table 7). Over ninety percent of the computer scientists and engineers consider this to be the case. Furthermore, they do not perceive that this has changed for those entering the industry today (see Table 7). In fact, 44.8% of the computer scientists, 36.6% of the engineers and 50% of the senior executives feel that education is even more important today than when they entered the industry.

Table 6: Percentage of Time Spent on Activities in Which Formal Education is Highly Relevant

% of Time	Less Than 10%	11% -- 50%	More Than 50%
Profession			
Comp.Scientists (N=97)	18.6% (18)	36.0% (35)	45.3% (44)
Engineers (N=49)	36.7% (18)	46.9% (23)	16.3% (8)
Senior Execs. (N=61)	50.8% (31)	29.5% (18)	19.7% (12)
Missing: 1			

Table 7: Importance of Formal Education for Getting First Job in Industry/Importance of Formal Education Today for Those Entering the Industry Today

Profession	Comp. Scientists (N=97)	Engineers (N=49)	Senior Execs (N=62)
Importance to First Job			
Important	90.7% (88)	93.9% (46)	71.0% (44)
Not Imp.	9.2% (9)	6.1% (3)	29.0% (18)
Importance Today			
More Imp.	44.8% (43)	36.7% (18)	50.0% (31)
Was Imp./ Is Still	37.5% (36)	51.0% (25)	37.1% (23)
Less Imp.	7.3% (7)	6.1% (3)	11.3% (7)
DK	10.4% (10)	6.1% (3)	1.6% (1)

Conclusion

The post-industrial hypothesis that knowledge is a strategic resource in a post-industrial economy does receive support in this preliminary and exploratory analysis of the employees in the information industry. Formal education in computer science at the university level appears to be the best qualification for work in this area. Not only are the computer scientists the largest professional group, but computer science is selected as the best preparation by almost 40% of the engineers as well. Advanced education in certain subjects such as economics and teaching can also be utilized in this industry as many of the firms' products and services are for specialized markets requiring the expertise of social scientists as well as non-computer, non-engineering technical experts.

Furthermore, while computer science is the discipline of choice there are still opportunities in this industry for those with undergraduate degrees and community college educations. Occupational boundaries are still permeable and the relationship between jobs and education has not yet been formalized. The analysis of the data collected in this project is still in early stages. Future research questions include an examination of the

differential outcomes (e.g., income, job control, etc.) for those with similar jobs and different educational requirements.

BIBLIOGRAPHY

1. BELL, D. The Coming of Post-Industrial Society: A Venture in Social Forecasting. New York, Basic Books, 1973. 507 p.

2. BELL, D., The Social Framework of the Information Society. In: Dertouzos, M. and J. Moses, eds. The Computer Age: A Twenty-year View. Cambridge, Mass., MIT Press, 1979, pp. 163-211.

3. CLARK, C. The Conditions of Economic Progress. London, Macmillan, 1940. 504 p.

4. GERSHUNY, J. and W.R. ROSENGREN. The Service Society. Morristown, N.J., Schenkman Pub. Co., 1973. 156 p.

5. GERSHUNY, J. and I. MILES. The New Service Economy: The Transformation of Employment in Industrial Societies. London, F. Pinter, 1983. 281 p.

6. MILES, I. The New Post-Industrial State. Futures, 1985: pp. 588-617.

7. MOORE, G. Post-Industrialism: An Analytical Model Towards the Study of Social Control. Toronto, 1986. Unpublished manuscript.

8. PORAT, M. The Information Economy: Definition and Measurement. Washington, D.C., Department of Commerce, Office of Telecommunications, 1977. 8 vols.

INFORMATION PERSONNEL SURVEYS: THE MOROCCAN EXPERIENCE

NATIONAL INFORMATION/DOCUMENTATION PERSONNEL SURVEY

Mohamed Benjelloun
Director of the School of Information Sciences

Introduction

The contribution of the information sector to economic and social development has been amply demonstrated. Moreover, given that a nation's sovereignty is linked to its self-reliance in the field of information, the issue of structures in this domain forms part of the government's political responsibilities.

Each country has thus found it necessary to frame its own national information policy, particularly in the scientific and technological fields. Hence the efforts made to co-ordinate, at the national level, all separate, pre-existing policies.

On the other hand, the developing countries have as a rule been slow to appreciate the steadily growing importance of information; this explains, among other things, the absence of national policies in the majority of them and the consequently disastrous state of dependence to which they have been reduced.

In Morocco, the foundations of a national information policy were laid during the early 1970s. A number of action programmes were incorporated in the economic and social development plan for 1973-1977, and expanded in its successor (1978-1980), as the beginnings of an information infrastructure.

The point of departure had, in fact, been the setting up in 1968 of the National Documentation Centre (CND) to be responsible initially for the collection and processing of information on agriculture.

In 1972, the scope of this centre was extended to cover the totality of existing information, at the national and international levels alike, pertaining to economic and social development, particularly in science and technology. In addition, the CND was instructed to take the first steps towards creating a national information system.

During the centre's early years, the consolidation of this system, as well as the achievement of the other objectives assigned to the CND, ran into difficulties as a result of the increased call for skilled national personnel; indeed, a workforce survey of information units conducted by the CND in 1971 revealed grave

shortcomings in the specialist staffing and management of existing systems. Consequently, it was decided at government level to create an institution to be responsible for the training of specialized information/documentation personnel. The result was the School of Information Sciences (ESI), set up in 1974.

At the outset, teaching at the ESI was provided by foreign experts assigned by Unesco to implement a UNDP project "Assistance à l'Etude des Sciences de l'Information". But these experts were speedily replaced by national staff trained with international assistance, notably from Unesco and UNDP. Today, the ESI has a permanent teaching staff of 18; in order to be sure that it produces graduates whose training matches the requirements of the employment market, training programmes are revised whenever this is deemed necessary, and the ESI is regularly represented at various symposia and roundtables on education in the information sciences.

These measures notwithstanding, it proved necessary, twelve years after the opening of the School, to carry out a large-scale survey in order to obtain all the information necessary to prepare a better-adjusted plan of action for the School in future years. Accordingly, a national information/documentation personnel survey was conducted in 1986, in a joint operation by the ESI, acting as the principal body responsible for training information specialists, and the CND as chief co-ordinator for the national information sector.

Objectives of the survey

In any information personnel survey, it is imperative at the outset to delimit the working environment of the personnel concerned, and more particularly to establish the economic and administrative context. Next, it is necessary to obtain a picture of the relevant documentation units, with particular reference to their positive achievements and their shortcomings. On the basis of these two types of information, an attempt can then be made to define their personnel requirements and, in consequence, the numbers of staff which will have to be trained. At the same time, it should also be possible to evaluate the effectiveness of existing training arrangements, in order to make any changes that may be called for in the study programmes dispensed by the institutions concerned and to ensure a better match between training and employment.

The information/documentation personnel survey carried out in Morocco was devised with objectives practically identical to those set out above, and we shall examine these in greater detail.

It should, however, be pointed out that the survey differed in certain respects from the routine inquiries conducted by the other statistical services of the Planning Ministry.

This was the first survey of its kind not to be preceded by a preliminary statistical and scientific study. The field covered is in fact a volatile one, constantly subject to change. Information professionals have frequently seen their efforts to promote the sector for which they are responsible hampered by a lack of understanding in higher quarters. Moreover, in contrast with the public administration sector, which is quite clearly defined, the semi-public and private sectors remain somewhat nebulous, and this causes a great many problems when it comes to collaboration. Given the importance of the survey we are describing and its particularities, it was deemed necessary to ensure that the statisticians engaged for the operation were provided with advice and guidance by information specialists.

The economic and administrative context of the information sector

Documentation units, and - to an even greater extent - the sector as a whole, function in an economic and administrative context that is constantly changing. For this reason, the survey was constructed around a simple set of quantitative and qualitative data concerning institutions with documents collection at their disposal or endowed with one or more documentation units. The basic data collected for each institution covered by the survey concern: sector, activity, and type of budgetary administration and staff management for each professional grade, the units and their specialized staff being identified on the basis of information concerning: the number and type of units; the number, qualifications and duties of professional staff; and future prospects for the development of the sector.

The choice of these variables, although it may appear arbitrary, was in fact made to delimit a number of aspects and to furnish particularly valuable items of information.

Description of the documentation units identified

This description chiefly concerns the nature and size of the collection, its growth, its organization and the extent to which the information held is processed. Other matters covered include: the layout of premises; the structure of the budget - if any; users; and the staffing structure by status and grade.

Short- and medium-term evaluation of information/documentation personnel requirements

It is true that a penury of staff can jeopardize expansion in a given field, it is equally true that over-staffing can result in the devaluation of a profession. 'To educate and to train individuals for whom there is no prospect of employment is a waste of human resources.' (Moore, N., 1986, p.5).

Against the background of this principle, the results of the survey permit evaluation of workforce requirements as announced on the one hand by the heads of establishments and on the other by those responsible for the management of documentation units. But it is worth pointing out that stated requirements frequently differ from actual recruitment possibilities. In order to determine the latter, an inventory has to be made of vacant posts earmarked for information staff and financed under the current budget; existing international norms should also be borne in mind in this connection.

As part of the preparatory work for the survey, the co-ordinating committee referred to standards adopted at a conference held in Kampala, 1970, in order to determine minimum staffing levels for different types of information service, and to calculate an ideal range of posts which could be compared with requirements as expressed by heads of establishments and unit managers.

The training-employment match

> 'A good workforce planning system will provide information about more than just the overall levels of supply and demand. The qualitative aspects of the workforce can be equally important. In this workforce planners can contribute to the curriculum development process of the training institutions by providing information on the nature and level of skills required.' (Moore, N., 1986, pp. 8-9).

This section of the survey permits assessment of the 'skills' of the workforce in place, as well as the identification of shortcomings in training. It also discloses a number of criteria, based on assessments provided by decision-makers and unit managers, whereby the professional capacities of information/documentation staff can be improved, and their efficiency enhanced.

Scope of the survey

The scope of a survey depends to a great extent on its scale. If coverage is intended to be exhaustive, a list must be drawn up - if one does not exist already - of all the establishments likely to have documentation units or simply to be in possession of holdings that are deemed important. In our case, it was decided that two entities were necessary for statistical purposes: the individual documentation unit, constituting the baseline; and a larger entity encompassing one or more documentation units, but with an enhanced decision-making role as regards the estimated personnel requirements; this in fact means any establishment possessing one or more documentation units, as well as any body envisaging the creation of such a unit in the short or medium term.

The basic statistical unit comprised any information service fitting the definition of a documentation unit.

Tools for the survey

The tools utilized in the survey included questionnaires and instruction-sheets. Summary sheets were also prepared to list the findings; this task was performed manually as and when the questionnaires were returned.

The questionnaires

The questionnaires were prepared for the collection of data, the first concerning establishments, and the second, documentation units.

The "establishment" questionnaire

The "establishment" questionnaire was designed with two fundamental objectives in mind:

- to identify the documentation units and their professional staff;

- to obtain a picture of the current situation and future prospects in the documentation sector.

The questionnaire was in four parts:

- the first part related to the establishment itself, and in particular to its affiliation, geographical location, parent sector, functions, structure, mode of budgetary management and staff administration;

- the second part concerned information sources and documentation units, and also the graduate component of the information/ documentation staff;

- the third part was designed to reveal short- and medium-term prospects for the creation of new documentation units and skilled personnel requirements;

- the fourth part involved evaluation of the contribution of ESI graduates to documentation management, together with identification of shortcomings in the training programmes of the School, and possible reforms.

The"unit" questionnaire

The "unit" questionnaire was designed for completion by individual documentation units.

Four groups of related subjects were addressed:

- Firstly, the principal characteristics of the UD (Documentation Unit),namely: type, date of creation, mode of management;

- secondly, the main constituents of the UD, and more particularly its holdings, premises, budget and users;

- the third group related solely to the workforce: present status, professional profile and prevailing trends. This section also provided information concerning the immediate and medium-term potential personnel requirements of the UD;

- the fourth group related to the evaluation of the performance of ESI graduates, the identification of shortcomings in their education and suggestions for reform.

Instructions

Two types of instructions were prepared for those responsible for conducting the survey:

1. Instructions concerning completion of the questionnaires in the field. These instructions were compiled in a single document under three headings:

- concepts and definitions;

- instructions for the completion of the "establishment" questionnaire;

- instructions for the completion of the "unit" questionnaire;

2. Instructions concerning the processing. These were compiled in a single document with one section on the "establishment" questionnaire, and another on the "unit" questionnaire.

These instructions all took account of specific points raised by those who would be responsible for conducting the survey during their preliminary briefing.

The pilot survey

Once the methodological dossier had been finalized, and before the launching of the survey proper, it was considered indispensable to carry out a pilot survey, on the one hand to verify the scheduling of the different stages, and on the other hand to test the questionnaires.

The co-ordinating team conducted this pilot survey over a period of one week, with a random sample of ten establishments in the Wilaya of Rabat.

A wealth of information was obtained, making it possible, in particular:

- to delete certain questions for which replies were difficult to obtain or of uncertain value;

- to replace certain quantitative questions by qualitative questions:

- to revise the summary sheets;

- to evaluate the time required to complete the various forms under field conditions, and to process the results;

- to estimate the time required to conduct the survey on a national scale.

Conduct of the survey

Recruitment

So that it would have the best chances of success, those responsible for conducting the survey were selected from among the best statisticians and information professionals working in the various departments of the Planning Ministry.

This made it possible to put together well balanced teams blending statistical experience with information skills.

Altogether 39 individuals, deployed in 11 teams, were mobilized to conduct the survey in the field.

These workers underwent one week's briefing by the team of co-ordinators at the ESI, essentially to familiarize them with concepts and definitions and with the method to be used for collection and processing the various items of information.

Advance notice

Since this survey did not concern the general public, advance notice was limited to the dispatch of letters to the authorities in question, requesting them to give every assistance to those conducting the survey.

It should be added that Planning Ministry staff in the different economic regions contributed considerably to the practical organization of the survey.

Masterminding the survey

Given that the success of any inquiry depends on the efficiency with which it is organized, arrangements were made to monitor the progress of the survey in the field. This involved the following bodies:

- A central co-ordination unit operating from the National Documentation Centre. This unit was responsible for co-ordinating the different teams and supervising the survey as a whole. It ensured liaison between regions, and provided the teams with all necessary clarifications and solutions to problems encountered in the field.

- Regional secretariats for the survey in each of the seven regional offices of the Planning Ministry. These ensured nationwide coverage.

Each of these secretariats, which had telephone and telex facilities, was staffed by a team member who was responsible for planning the team's work and contacting the central co-ordination unit whenever a problem arose.

Conduct of the survey in the field

Apart from a certain amount of reluctance, not significant, encountered in the private sector, the survey took place in generally uneventful and favourable conditions. Isolated technical difficulties were all solved without delay, and at no time impeded the survey.

For travel between the main towns and in the centre of large urban agglomerations, team members used public transport; vehicles were also placed at their disposal.

Monitoring

In the course of the survey, two types of monitoring were carried out:

- ongoing monitoring by the senior team member in each economic region;

- sample monitoring by the co-ordinating team as the completed questionnaires arrived at the central unit.

Processing

For various technical and pratical reasons, it was decided that manual, so-called "auto-processing" would be carried out.

This was done at two levels:

- at the regional level: data were processed as they were collected by the teams working in the field. This made it possible to produce regional summary sheets covering all the components of the survey;

- at the national level: after checking of the regional auto-processing, summary sheets were consolidated so as to yield results of national scope.

This operation was entrusted to the central co-ordinating team, which was also responsible for compiling the sheets.

National processing took two months.

Compilation of the results

The compilation of the results involved analysis of more than 180 summary sheets, divided into two groups:

- tables relating to the characteristics of establishments covered by the survey;

- tables relating to the characteristics of the documentation units covered by the survey.

The characteristics selected for the survey were systematically referenced by sector and by economic region. Tables in the second group showed results by sector and by category of documentation unit.

Some significant results

The findings of the survey were subjected to expert analysis so that specialized reports corresponding to the objectives of the survey might be prepared. Three reports were duly prepared by professors from the ESI in collaboration with specialized statisticians or planners, the first comprising a situation report, the second concerning the evaluation of professional personnel requirements, and the third dealing with the match between education and employment.

These three documents show that the survey identified 957 UDs attached to 602 establishments; that 585 establishments employed an average of 427 persons, broken down into three grades: 48 senior staff; 146 middle-level staff; and 232 lower-grade staff. The government was the major employer, accounting for more than 56 per cent of the total staff. This fact was principally due to the dominant position of the public sector in all the economic regions, with the exception of the Centre, and more especially of the city of Casablanca. Here, the private sector is the leading employer, operating more than 41 per cent of the establishments covered by the survey, the reason being that the concentration of private enterprises is greatest in Casablanca, which is the country's economic capital.

As regards the type and nature of the UDs, the survey revealed that libraries of colleges and secondary education

establishments accounted for more than half of the units surveyed. These predominate in all the economic regions, with the exception of the Northwest, where specialized libraries are more numerous, and comprise 44 per cent of the total.

It also emerged from the survey that administrative methods as well as the size of the budget, has a direct influence on the functioning and development of the documentation sector.

More than three-quarters of the UDs surveyed, i.e. 732 units, stated that they had their own budget. UDs in the semi-public sector are relatively better off in this respect, with more than 88 per cent managing their own budgets.

As regards accommodation, 95 per cent of UDs (910) have their own premises, while 47 continue to share offices with other services of the establishment to which they are attached.

Concerning holdings, more than three-quarters of the UDs surveyed have centralized collections at their disposal.

With regard to personnel, a distinction was made between immediate (1986) and short-term (1987-1990) requirements. Concerning the former, 70 posts for which budgetary provision had been made were found to be vacant, viz.:

- 49 posts for information workers;
- 15 posts for information specialists;
- 6 posts for professionals other than ESI graduates.

With regard to the forecasting of requirements, the survey further revealed that of the 585 establishments considered, only 179 had prepared staffing forecasts for the year 1986. According to these forecasts, requirements for that year totalled 614 qualified professionals, as follows:

- 320 information workers;
- 231 assistant information workers;
- 47 information specialists;
- 17 graduates of other higher education institutions.

Medium-term requirements (1987-1990) were the subject of submissions on the one hand by the heads of establishments, and on the other by the heads of UDs.

According to the former source, of the 585 establishments surveyed, 273 had indeed addressed the question of future information and documentation personnal requirements. These totalled 1,194 professional staff.

On the other hand, according to the managers of the UDs, estimated requirements amounted to 1,133 posts, including 633

professional posts, 175 non-specialized documentation posts and 325 posts in other categories.

As regards the education-employment match, the objectives of the third report were:

(i) to analyse the assessments offered in the course of the survey by employers and heads of UDs concerning the performance of ESI graduates;

(ii) to identify shortcomings in the education of ESI graduates in relation to the employment market;

(iii) to analyse the educational programmes provided at the ESI and, with due reference to the shortcomings identified, to recommend reforms.

The documentation generated by the survey described above is contained in five volumes:

- one volume describing methodology;
- one volume presenting the overall results;
- a report on the status of the information sector in Morocco, according to the findings of the survey;
- a report concerning the evaluation of professional personnel requirements;
- a report on the eduction-employment match.

Conclusion

The national survey carried cut in Morocco concerning personnel in the information/documentation sector, which has to contend with certain constraints, produced invaluable material which shed light on a number of relevant issues. This information collated and objectively interpreted, will contribute not only to the preparation of a development plan for the School of Information Sciences, but also to improvements in the structure of the national information system. Lastly, it should be noted that the data processed constitutes only a tiny fraction of the material actually collected, which could be subjected to further analysis and in-depth investigation.

Rabat, 27 January 1988

BIBLIOGRAPHY

1. MOORE, Nick. Guidelines for conducting information manpower surveys. Vol. 1 (The Manual). Paris, PGI, 1986.

2. ECOLE des SCIENCES de l'INFORMATION et CENTRE NATIONAL de DOCUMENTATION. Méthodologie de l'Enquête. Enquête Nationale sur le Personnel de l'Information-Documentation. 1986. Rabat, ESI, CND., 1986.

3. ECOLE des SCIENCES de l'INFORMATION et CENTRE NATIONAL de DOCUMENTATION. Résultats de l'Enquête. Enquête Nationale sur le Personnel de l'Information-Documentation. 1986. Rabat, ESI, CND, 1987.

4. BENSLIMANE, F. et M. BERRICHI. Le Secteur Informationnel au Maroc d'Apres les Résultats de l'Enquête. Enquête national sur le Personnel de l'Information- Documentation. 1986. Rabat, ESI, CND., 1987.

5. EL FARH, A. et A. NOUIJAI. Evaluation des Besoins en Professionnels. Enquête Nationale sur le Personnel de l'Information-Documentation. 1986. Rabat, ESI, CND., 1987.

6. MISKI, A. et A. BENRIDA. Adéquation Formation-Emploi. Enquête Nationale sur le Personnel de l'Information-Documenation. 1986. Rabat, ESI, CND., 1987.

SESSION V

SURVEYS OF PROFESSIONALS AND EMPLOYMENT IN LIBRARIANSHIP

26 August 1988

Chair: Bimpe ABOYADE (Nigeria)

PROFESSIONAL PROFILE OF THE LIBRARIAN IN COLOMBIA

Martha Alicia PEREZ and Maria Clemicia MOLINA

Escuela Interamericana De Bibliotecologia
Universidad de Antioquia
Medellin, Colombia

Introduction

The capitalist system within which we are immersed is characterized by the deliberate application of science to material production processes. Emerging from two significant technological revolutions (the naval/commercial in the fifteenth century; the industrial in the eighteenth century), capitalism was superseded by the 'second industrial revolution' which occurred in the middle of the nineteenth century, and by today's scientific-technological revolution.

In the beginning capitalism appeared as a product of an empirical technical development, caused by the generalization of experience and immediate needs separated from science. Later, when specialization occurred, companies became interested in and took advantage of scientific research results for technological benefits, especially those discoveries and innovations applicable to production.

In fact, one of the main functions of today's capitalist states is scientific and technological research. Enormous amounts of resources and a great deal of effort are justified by appeals to 'security', 'defense, and other similar functions. Community service and environmental protection are other reasons used to defend expenditures. However, in most cases, research simply supports the economic growth requirements of capitalism while providing some kind of guarantee of social stability.

In this manner, all the scientific and educational activities are subordinated to the demand of capitalist monopolies, which decide not only the field of research, but the learning objectives and the purpose(s) of research. Thus, the organization and motivation of the educational and cultural institutions of the capitalist system remain firmly within the ideology imposed by capitalist specialization.

At the present time, the scientific-technological revolution seems to be reaching its end. When monopolization of capitalist economy at the international level reaches a climax, the overt control of the non-capitalist world by multi-national corporations will be realized. In the meantime, while companies try to effect capital saving innovations, the demand for a qualified, specialized workforce comes to a standstill.

The capital accumulation process seems to be less strong, at least in the sector where more manpower is required. The trend is toward war industry with its dependency on state defense purchasing and contracts. Consequently, barriers to any harmonic reproduction cycle of the labor force, have begun appear in metropolitan areas.

Information regarding this trend toward a decreased demand for specialization, unfortunately, reaches too late those whose education is motivated by expectations of 'good jobs' with high salaries. When reality hits, in the form of under-employment or low salaries, disillusion results. The state responds by creating new needs and new services, on the one hand, and on the other, by erecting barriers which limit the entry of new students into the educational system.

Generally, these operative solutions are implemented too late to prevent unemployment among technicians. Inevitably, a crisis in education results from an over-production of specialists.

The concept of profile -- occupational profile, competence, personality profile, or the ideal profile of academic professional -- is introduced. Arising within an educational context, 'profile' is a concept congruent with the previous discussion, and provides a means to discuss scientific and educational activities.

Unfortunately, no great clarity exists regarding either the terminology or the concept of profile. Generally, there exists a confusion between occupational and professional profiles, which presents serious problems for curriculum planning strategy. Science development becomes conditioned to socio-economic under-development, represented by the occupational sector in the economically dependent countries.

It is important to note the concerns about the effectiveness of profiles in our country. Where there exists no solid occupational structure and high rates of unemployment or under-employment among the specialists, the concept of profile becomes distorted by socio-economic characteristics and is unable to generate a useful occupational structure.

Research Problem and Justification

Beginning this study, we assumed the existence of two predominant trends or viewpoints, opposite at one time and complementary at another, which may be used to define professional profiles: pragmatic and theoretic-academic.

The first viewpoint, generally held by sectors outside the university setting, particularly by private and public employers; claims as fundamental that professionals (in our case, librarians)

possess technical abilities, aptitudes, and knowledge allowing them to solve concrete problems existing today, at different levels, in the institutions where they work or want to work. As part of the occupational sector, these employers express doubts about the education provided by universities. A university education may not only not fill their needs for trained personnel, but it may also damage the university/institution relationship considered basic to the development of society.

The occupational sector requires information about work going on in universities in order to develop their own technologies in a manner consistent with Colombian socio-economic development as a whole. In the face of the crisis created by both general and professional unemployment, this sector looks for professionals with the creative mentality demanded by new employment opportunities.

The second trend or viewpoint, the theoretic-academic, held by the university community, advocates a more futuristic professional education. This kind of education, advocates maintain, produces an integrated professional, with a solid socio-humanistic background, who is aware of world technological advances and who has a realistic view of development perspectives.

Based on these considerations, the importance of this study becomes clear. Systematically confronting these 2 predominant approaches to education, the study proposes a compromise approach helpful in determining the librarian's professional profile for the next decade. This new approach includes the occupational profile and the performance characteristics necessitated by scientific and technological developments. From this academic exercise, therefore, several important outcomes can be expected.

First, the curriculum of the Interamericana Library School can be revised by basing it on a more realistic view of social and technological changes, and changes predicted for the future.

Second, a closer relationship between academia and the occupational sector can be effected to facilitate better knowledge about librarians' roles, responsibilities, and qualifications, not only in traditional work, but also in areas now emerging.

Third, the real possibilities existing in the education and training of librarians can be clarified to better prepare graduates to be self-directed and able to meet the demands of new careers.

Finally, this research study hopes to demonstrate the utility of these kinds of academic exercises

in under-developed countries which lack national planning. Lack of development and planning need not be barriers to research of this nature.

General objectives are:

* to elaborate a conception of the librarian's professional profile as required at the national level, for the purpose of curriculum redesign

* to validate the proposed methodological strategy used to generate profiles and curriculum consistent with national needs

Specific objectives are:

* to analyze general perspectives for the development of library science at a national level

* to learn the occupational sector's requirements for the education and training of librarians for the nineties

* to determine if consistency exists between education and training and actual professional performance requirements (i.e. consulting graduates)

* to identify jobs, functions, and responsibilities of librarians

* to evaluate the relationship between theory and practice in the training of librarians

* to determine the different academic, professional, and social expectations of working librarians

* to detect continuing education needs of employers and working librarians

Research Design and Methodology

This work followed three stages:

1. elaboration of the librarian's theoretical or ideal profile;

2. elaboration of the librarian's occupational profile;

3. comparison of theoretical and occupational profiles to elaborate the librarian's professional profile

To elaborate the librarian's ideal profile, the work --

(A) Analyzed the literature to graphically interpret historical aspects of the problem and analyze new trends in the field of library science, including the analysis of educational objectives, trends, and practices in the training of human information resources

(B) Developed a series of workshops approved by experts to allow us to:

1) analyze basic postulates relevant to the training of librarians according to variables having observable impact and importance;

2) describe the ideal expected professional performance;

3) determine the knowledge, attitudes, and abilities required for an ideal professional performance.

Experience No. 1: Basic postulates about librarians

The objective here was to analyze basic postulates relevant to the training of human information resources according to variable showing significant impact.

Experience No. 2: Description of optimum expected professional importance

The objective in this experience, was to identify and list professional roles of new graduates. The list includes professional responsibilities undertaken by new graduates.

Experience No. 3: Knowledge, attitudes, and abilities

The objective here was to determine knowledge, attitudes and abilities required for optimal professional importance.

Experience No. 4: Academic, professional and social expectations

Expert groups here presented the academic, professional, and social expectations they believed should be associated with professional librarianship.

To elaborate the librarian's occupational profile, our occupational analysis included:

(A) bibliographic recompilation and analysis;

(B) the design of instruments able to determine what the professional does and why (What attitudes, knowledge, and abilities are needed to perform according to expectations?);
(C) selection of a representative sample; elaboration of an interview model for employers;
(D) validation and application of instruments;
(E) tabulation and analysis of results.

To elaborate the professional profile, keeping in mind the result of the occupational profile analysis, we contrasted it with the ideal profile. Afterwards, we presented the profile to our group of experts, and asked these professors at the Escuela Interamericana de Bibliotecologia (EIB) to generate a professional profile.

Universe and Sample

The sample population was drawn from graduates of EIB and graduates of two other library schools (Javeriana University and La Salle). The total number of EIB graduates participating in the study was 420; 80 graduates from La Salle and Javeriana University participated.

Information collection techniques used in the study were: a literature analysis, a workshop with groups of experts, a survey of graduates, and a survey of employers.

Statistical analysis techniques consisted of a descriptive analysis of the collected information in terms of percentages, mean tendency, and correlations.

Theoretical or Ideal Profile

An analysis of new trends in librarianship allows us to center attention on a number of factors. New roles arise for librarians; for example, communicator, change promoter agent, and administrator. The existence of these new roles is evidence that supports postulates offered by experts. Experts characterize the professional as follows:

* a critical observer of social problems and an actor within cultural processes, who is capable of presenting solutions in educational, scientific, and cultural fields with a clear awareness of the importance of information for the development of the country

* an information systems planner, organizer, and administrator

* a promoter of information use as a factor in development

Four consequences can be derived from the preceding three postulates.

> 1. As an information systems planner, the librarian is expected to keep abreast of professional, scientific, and technical advances, so that new technologies can be implemented inside or outside the library.
>
> 2. Interdisciplinarity is established at two levels: (a) in the study of related fields to evaluate socio-economic conditions; (b) in work with other specialists to implement new technologies.

From consequences (1) and (2), we can infer that professionals should be trained to perform and apply research. Also, creativity, the ability to work with others, communication skills, and a service orientation can be considered desirable characteristics of the information professional. The professional is also distinguished as one who values information as the focus of the profession.

> 3. The librarian is expected to be knowledgeable about national realities and world professional trends, to avoid certain unnecessary stages, and to adapt new models, according to demonstrable needs. Only with this kind of knowledge can librarians, as postulated by experts, "...participate in the definition of guidelines for national information policies."
>
> 4. In the study and design of new information products and services, the librarian is guided by variation in the job level spectrum where the demand for traditional library services will decrease, although not totally.

A last postulate enunciated by the experts, contending that librarians should "...have knowledge about research, recompilation techniques, [the] organization, retrieval, diffusion of information...", and, in general, the entire information transfer process, leads to all four of the consequences explicated above. Knowledge about social realities and interest in the information content of different subject fields complementing this specialized knowledge is clearly necessary, given the validity of expert opinion.

The appearance of new jobs supports the postulates proposed by our experts. Librarianship thus expands to include new roles, such as, information use promoter, archivist and microfilmer,

researcher and professor, information unit administrator, information services and goods producer, cultural promoter, information consultant and advisor, editorial advisor, and bibliographic commercialization advisor.

Occupational Profile

Table 1 summarizes performance expectations of librarians held by graduates and employers.

Table 1: Performance Areas According to Graduates and Employers

GRADUATES	EMPLOYER SECTOR
Archives	Archives
General Administration	Collection Development
Information Analysis	Documentation
Institution Consultant	General Administration
Marketing	Information Analysis
Microfilm	Services
Research	
Services	
Systems (Automation, Informatics, etc.)	

Table 1 illustrates the similarities found between the information provided by graduates and that shared by employers. We can conclude that librarians are actually working in the following areas: administration, and information analysis and services (the most significant ones); and (less frequently) documentation, research, archives, collection development, microfilm, systems, and consulting.

According to employers, areas in which librarian services will be required for brief, average, or extended duration are the main areas of documentation, special information analysis, services, automation, and informatics. Secondary areas where library services will be in demand are archives and publications.

Table 2 illustrates views shared by graduates and employers regarding forecasting for main areas of library services. Graduates forecast needs not recognized in the employer sector probably because employers know relatively little about the profession.

Table 2: Future Orientation of the Profession According to Graduates and the Employer Sector

GRADUATES	EMPLOYER SECTOR
Archives and microfilm Automation and informatics Documentation (information retrieval through databases) Information democratization Information systems/networks Specialized information systems and networks	Automation/informatics Information systems/network

Jobs that are actually being performed by librarians (in order of frequency) are: information unit head, professor, cataloger, microfilm and archives supervisor, serial librarian, services librarian, technical processes librarian, selection and acquisition librarian, reference librarian, documentalist, and group coordinator.

Table 3 shows a coherence between employer and librarian opinion of personality traits desirable in a professional librarian.

Table 3: Librarian's Personality Characteristics

GRADUATES	EMPLOYER SECTOR
Capacity for Analysis Human Relations Initiative Recursivity Research Spirit Responsibility	Analysis Capacity Creativity Honesty Human Relations Organization Recursivity Research Capacity

Together these traits define the librarian's ideal personality characteristics.

Librarian's Professional Profile for the Nineties

Development trends in library and information science, when viewed panoramically, give rise to three postulates or beliefs regarding the future role of the professional.

> 1. The belief that traditional information media (paper, books, journal publications, etc.) will disappear with the continued use of electronic technologies, predicts, as a consequence, the death of the library as an institution. Thus, those who

accept this belief, predict that the librarian's proper role will be in the field of communication.

2. Rapid changes in social, economic, cultural, and political spheres make accurate prediction and forecasting impossible. The librarian, acting as a change agent, must be one who can plan according to specific, real, and concrete situations.

3. However, as new technologies are integrated into the library, the permanence of the library as an institution will be assured.

Four important consequences can be drawn from the preceding three postulates:

1. Application of new information technologies (in or outside the library) should become the focal point in professional development. Understanding how to use technologies enables the librarian to meet the challenges of the electronic age.

2. Interdisciplinarity becomes established at 2 levels:
(a) in the study of related fields of knowledge which allows the evaluation of economic conditions and other areas influenced by information; (b) in collaborative efforts with other specialists (systems analysts, telecommunications specialists, administrator, etc.) the implantation of new technologies is accomplished.

3. Developing countries need knowledge about professional world trends. However, first they must understand their own reality, adopting foreign models only after diagnosing the situation. Education, concentrating on the unknown and the speculative, can provide a research base.

4. The employment level spectrum of jobs related to information will change considerably with the adoption of new technologies, since these technologies cause a revolutionary impact on economic activity. Some information activities will need to be modified and others reinforced to meet new demands.

Examples of modified information activities are: (a) implementation of resources; (b) application of management and planning techniques; (c) development of cooperative plans aimed at planning and organizing systems and networks; (d) increasing

information science research; (e) developing and refining information indexing, analysis, and retrieval techniques; (f) studying social, economic, political, and cultural conditions of the country; and (g) educating and training information users.

Based on the above activities, job-generating functions librarians can be educated to perform include: (a) research and information development (note 4c, 4d, and 4e); (b) creation, development, and application of new products (e.g., electronic publications) (note 4a, 4d, and 4f); (c) information records management (note 4b); (d) database planning (note 4a and 4b); information systems and service analysis and design (note 4c and 4f); (e) marketing and economic aspects of information (note 4b and 4f); (f) selected search of information (note 4e and 4g).

To conclude, in those areas such as information consulting, communication, and administration, requiring more emphasis not only on "know-how", but on knowledge, the librarian can function as a change promoter agent.

Postulates that Should Guide Professional Educational and Performance of Future Librarians

As a professional, the librarian should be capable of performing the following tasks.

* As critical observer of social problems, acting within cultural processes, the librarian must be capable of presenting solutions in the educational, scientific, and cultural fields, with a clear awareness of the importance information has in the development of a country.

* The librarian must be able to organize, administer, and evaluate information.

* The study of present information products and services ought to help in the design of new products and services.

* Librarians should promote the use of information as a factor in development plans.

* Librarians should be able to participate in the definition of national information policies.

* The need to think creatively and work in cooperation with other specialists, both require strong communication skills and a strong service orientation.

* Librarians need to keep current with scientific and technological advances of the profession in order to adapt

new technologies to information systems.

* Information must be valued and recognized as the knowledge object of the profession.

* The librarian requires knowledge about social realities. Interest in the information content of different areas complements knowledge about research; administration; recompilation techniques; and the organization, retrieval, diffusion and general transfer processes of information.

Jobs Performed By Librarians in Their Professional Practice

A fusion of characteristics generated by theoretic-academic and occupational profiles leads to the identification of new jobs that match the educational preparation of librarians. Some of these new jobs are: information unit administrator, information use agent, researcher and professor, microfilm and archive supervisor, cataloging and classification head, serial librarian, information system analyst and designer, services librarian, head of technical services, selection and acquisitions librarian, documental and bibliographical analyst in research, producer and marketer of information goods and services, cultural promoter, reference librarian, documentalist, and group coordinator.

Personality characteristics considered to be indispensible to satisfactory performance in these new job positions are: analytic capabilities, organizational ability, ease in human interactions and relations, recursivity, initiative, research spirit, honesty, and willingness to accept responsibility.

Areas which employers believe the university should stress in the educational preparation of librarians are: automation (computers and data processing), archives, administration, services, and specialized information systems and networks.

Future Orientation of Information Systems and Networks in Librarians' Professional Practice

According to the future trends outlined by experts, graduates, and employers, education needs to fill some needs common to all three groups. Specifically, education in administration, in archives and information systems, in networks and in other new information handling technologies (e.g., documentation, information retrieval through database searching) are considered to be priorities. Graduates must be trained to adopt and apply these advance technologies in the workplace.

At the same time, however, all groups recognized a need for more inter-disciplinary courses to support the building of research skills and attitudes, and optimum teaching and professional

performance. In addition, they viewed as imperative social and humanistic education that will foster a better and more democratic access to information and provides the knowledge needed to evaluate the socio-economic conditions of the country.

Thus, the professional profile just described leads to the recognition of the need to revise four primary educational areas of the curriculum to enable an optimum professional practice. These four areas are: the technical area, the administrative area, the research area, and the humanistic and social area.

In the first, technical service education and training should include: cataloging, classification, documentation, indexing, information analysis and retrieval, archives, microfilm, informatics, automation, and telecommunications.

The second, administration, should include education and training in human, physical, and financial resources administration, planning, project formulation and evaluation, cooperative work, and communication.

The third, research, should educate librarians in information science research, which demands knowledge of other fields, through inter-disciplinary assignments and coursework.

Finally, human and social areas can be addressed in the curriculum by training librarians to observe social problems critically or analytically, to function as change agents, and to act knowledgeably within cultural processes. Components to be addressed in human and social education include sociological, psychological, political, economic, and cultural areas.

REFERENCES

1. BECKER, Joseph. An Information Scientist's View on Evolving Information Technology. Journal of American Society for Information Science. 35 (3) May, 1984: pp. 164-169.

2. BORKO, Harold, Predicting Research Needs in Library Science Education. In: BORKO, Harold. Targets for Research in Library Education. Chicago, ALA, 1973: pp. 200-222.

3. DEPARTMENT OF EDUCATION. Office of Libraries and Learning Technologies. New Directions in Library and Information Science Education. In: King Research Newsletter. 1 (March, 1983). 10 p.

4. FILLEY, Richard D. Profile of an I.E. Industrial Engineering. 14 (8) August, 1982: p. 34.

5. FOSKETT, D.J. Preliminary Survey of Education and Training Programmes at University Level in Information and Library Science. Paris, UNESCO, 1976. 149 p.

6. GLEAVE, D., C. ANGELL, and R. WOOLEVY. Structural Change Within the Information Profession: A Scenario for the 1990's. Aslib Proceedings. 37 (2) February, 1985: pp. 99-133.

7. Historical Development of Education for Librarianship in the United States. In: Education for Librarianship. Chicago, American Library Association, 1949.

8. KRZYS, Richard Andrew. Education for Librarianship in Colombia. Cleveland, Western Reserve University, School of Library Science, 1965. 248 p.

9. KRZYS, Richard Andrew. A History of Education for Librarianship in Colombia. Metuchen, N.J., Scarecrow Press, 1969. 203 p.

10. LANCASTER, F.W. Future Librarianship: Preparing for An Unconventional Career. Wilson Library Bulletin. 57 (9) May, 1983: pp. 747-753.

11. MORAN, Barbara B. Academic Libraries and New Technologies. In: MORAN, Barbara B. Academic Libraries: The Changing Knowledge Centers of Colleges and Universities. Washington, D.C., American Society of Higher Education (ASHE), 1984: pp. 5-28.

12. MORAN, Barbara B. Library Collection and Cooperation. In: MORAN, Barbara B., Academic Libraries: The Changing Knowledge Centers of Colleges and Universities. Washington, D.C., American Society of Higher Education (ASHE), 1984: pp. 66-77.

13. OTTO, Theophil M. The Academic Librarian of the 21st Century: Public Service and Library Education in the Year 2000. Journal of Academic Librarianship. 8 (2) May, 1982: pp. 34-88.

14. PARKER, J. Stephen. Planning the Education and Training Programme for 1984-1985 Against the Background of Past Experience. Paris, UNESCO, 1982. 37 p.

15. PLUMMER, M.W. Training for Librarianship. Library Journal. 26 (317) June, 1901.

16. SARACEVIC, Tefko. The Evolutionary and Revolutionary Changes in Information Science Education in the United States. Revista AIBDA. 6 (2) July--December, 1985: pp. 75-91.

17. SCHUR, Herbert. Study of Past, Current and Planned Activities in Education and Training. Paris, UNESCO, 1980. 53 p.

18. UNESCO. List of Documents and Publications of the General Information Programme and Unisist = Liste des documents et publications du programme general d'information et Unisist = Lista de Documentos y Publicaciones del Programa General de Informacion y Unisist: 1977-1983. Paris, UNESCO, 1985. 196 p.

19. WILSON, T.D. Guidelines for Developing and Implementing a National Plan for Training and Education in Information Use: Final Draft. Paris, UNESCO, 1978. 84 p.

20. WILLIAMS, Robert V. and Martha Jane R. Zachert. Specialization in Library Education: A Review of the Trends and Issues. Journal of Education for Library and Information Science. 26 (4) Spring, 1986: pp. 215-232.

21. WILLIAMS, C.C. Training for Library Services. New York, Carnegie Corporation, 1923.

A SURVEY OF HEBREW UNIVERSITY LIBRARY SCIENCE GRADUATES, 1957-1984

Bluma C. PERITZ
Graduate School of Library and Archive Studies
Jerusalem, Israel

Tamar SHAGAM (CERBU)
Main Library
Tel Aviv University
Tel Aviv, Israel

Introduction

The founding of the Hebrew University Graduate Library School in 1956 marks the beginning of academic library education in Israel. Almost thirty years later, in 1986, a survey of the graduates of that school was taken. Its aims were twofold: first, to obtain a picture of the activities of professional librarians and second, to gain some understanding of the attitudes towards and the needs for continuing education in this group of professionals. The data obtained by this survey have some interesting policy implications, which will be discussed in this paper. In order to see the survey in its context it is, however, useful to start this presentation with some background data on Israel and its university education system.

Background Data on Israel and Its Educational System

At the end of 1986, Israel numbered some 4,331,000 inhabitants; 3,561,000 of them Jewish, 595,000 Moslems, 101,000 Christian, and 74,000 Druze. The country is highly urbanized: almost 90% of the population lives in localities of more than 2000 inhabitants. In the past Israel has experienced very high growth rates, mainly because of Jewish immigration into the country; more recently, however, it is growing at the more moderate pace of less than 2% per year.

The ancient language of Hebrew is recognized as the national language of the country; the law requires that all government publications and directional signs be trilingual: Hebrew, English, and Arabic.

By most social, demographic, and economic indicators, Israel should be counted among the more developed countries. Life expectancy is high and so is the per capita income. On the other hand, Israel's population is generally much younger than that of Western countries and its fertility rate tends to be higher. The educational level of the population increases sharply as one moves from the older age cohorts to the younger ones.

Taking as an example, the age number of years of schooling is as follows (at the time of the 1983 population census):

Up to 10	years of schooling	31.3%
11-12	years of schooling	35.2%
13-15	years of schooling	18.6%
16+	years of schooling	14.9%

One sees that more than two-thirds of the population have over ten years of schooling.

The number of university students in Israel is relatively high: 67,160 or 1.6% of the total population. Another 34,000 are students in non-academic or semi-academic post-secondary education to 2.3%. During the academic year 1985/86, 12,000 persons received university degrees in Israel; 26% of these were graduate degrees or diplomas. According to a large survey carried out in 1984, Israel had 206,000 university graduates, 5% of the country's population.

Books, Reading and Libraries in Israel

In 1984/85, 4161 books (2214 of them new titles) were published in Israel --about one title per 1000 population. The number of periodicals published was 911, two-thirds of them in Hebrew. The number of dailies was 21. In a recent reading survey (1986/87), 49% of the population aged 14+ read at least one book per month, 16.5% read at least 3 books, and 82% at least one newspaper per week.

The country is covered by 983 public libraries (including branches and book mobiles) serving some 973,000 registered readers, and 1552 school libraries. Furthermore, there are about 400 special libraries and information centers, seven university libraries with 4,700,000 volumes, connected by a computerized network system, and, of course, the National Library, with its two million volumes.

The libraries of the kibbutzim (the collective settlements) deserve a special mention. With a population of 126,000 (3.5% of the country's population), they are served by libraries with a total of over two million volumes. Their ratio of volumes per population as well as reading per capita are among the highest in the world[1].

---

[1] Statistical data in the above two sections were compiled mostly from: Central Bureau of Statistics. Statistical Abstract of Israel, 1987. No. 38, Jerusalem, Israel, 1987. The reader may also consult Hoffman-Pfeffer, C. The Emergence of a Multiple Library System as a Result of Needs in Rural Israel: A Case Study 1975-1985. Libri. 37 (1) 1987: pp. 38-51.

Library Education

Professional training of library and information personnel in Israel is offered today at three different levels and by a variety of institutions. The subject is constantly under review and in 1986, the Ministry of Education and Culture established an Advisory Council in charge of professional training for public and school librarians.

Three schools function within universities. The Graduate School of Library and Archive Studies of the Hebrew University in Jerusalem, established in 1956, adopted the framework of the American model of professional education. It offers: a graduate diploma, an M.L.S., and recently, a Ph.D. in certain areas of specialization. this is the only school to offer the M.L.S. and Ph.D. degrees.

Haifa University opened a graduate diploma in 1972 as part of the Faculty of the Humanities and in 1986, an undergraduate program, which is part of a general B.A. and does not lead to a professional degree.

Bar-Ilan university (the only orthodox university in the country) opened its program in 1973. The program is part of the Faculty of the Humanities and offers a graduate diploma similar to that of the other schools and an undergraduate program of librarianship as a second major course of study.

In the 1980s, there was a growing awareness among professional leaders that the non-academic training courses established in the early 1960s are inadequate and that the public and school librarians should have a broader educational background.

The Council for Public Libraries at the Ministry of Education initiated major changes by creating a new program equivalent to the training programs for elementary school teachers. The first such program leading to the degree of "chartered librarian" was offered since 1976 by the Oranim College (affiliated with Haifa University School of Education).

Based on this model several other colleges, including some teachers' colleges, have created similar programs. The trend is to incorporate as much of the para-professional education into colleges, including colleges of technology.

The Kibbutz (collective settlement) libraries have a program of in-house training for larger groups of librarians. These courses use senior professional people in their training programs.

The Survey of Graduates: Population and Methods

Turning now to the survey of graduates[2], one more word of warning may be in order: the survey deals only with the graduates of one library school. Not only are there two other library schools in Israel; a substantial number of graduates of library schools from abroad are also active in the country.

The population to be studied was defined as "all the graduates of the Hebrew University Graduate School of Library and Archive Studies who work as librarians in Israel2. Thus, by definition, people active in other fields -- such as archivists or faculty in library schools -- are excluded from the study. The survey was carried out by mailing a fairly elaborate questionnaire to all the graduates whose address was traced. Several searches, through formal as well as informal channels, were performed in order to update the address files. The percentage of non-respondents was kept as small as possible by means of an extensive follow-up by telephone. The result of these efforts can be viewed in Table 1 below.

Table 1: Number of Graduates, Target Population, and Population Surveyed

Total Number of Graduates		**660**
Therefrom:	Retired	53
	Abroad	75
	Deceased	18
	Not Working as Librarians	83
Target Population		**432**
Therefrom:	Address untraceable	42
	Non-respondents	95
Total Surveyed		295

[2] Shagam (CERBU), Tamar. A Survey of Library and Information Science Graduates between the Years 1956-1984: Population Description and Attitudes Towards Continuing Education. Jerusalem, Hebrew University, 1987. Master's Thesis.

It is readily seen that of the 660 graduates only two-thirds are part of the target population. At first sight the percentage of those who did not respond to the survey questionnaire, 42+95=137 persons, is quite large: 32% of the target population. It must be kept in mind, however, that many of the non-respondents are also likely to have retired, to have left the profession, or to be residing abroad, so that the actual rate of non-response is certainly lower than that resulting from Table 1.

The results of this survey are presented in two parts: one dealing with the general characteristics of the graduates and one concerned with their attitudes regarding continuing education: awareness, perceived needs, preferred forms, and responsibility.

Results

The distribution of our graduates according to the types of library in which they work is certainly most unusual.

Table 2: Librarians Surveyed by Type of Employing Library (%)

Type of Library	Percentage (%)
University	63.5
Special (incl. information centers)	23.5
Public	8.5
School	4.4
Total	100.0

Almost two-thirds of the graduates are working in university libraries. In contrast, only about 13% are working in either public or school libraries. Less than one-fourth are in special libraries or information centers.

The main reason for this peculiar structure resides in the fact that the period of rapid growth of our universities, the late fifties and the sixties, coincides with the development of academic library education in Israel. As the demand for professional librarians in the universities grew, our library school was ready to supply the manpower needed. The public library system, on the other hand, started earlier and developed more slowly, using in the main (until recently) para-professional librarianship.

The functions performed by our graduates are largely along the traditional lines. Information retrieval is still an infrequent activity, although in this respect the picture has

changed during the last two years. The high percentage of librarians with multiple functions is a result of the relatively large number of small libraries, public, special, or departmental libraries in an academic setting.

Table 3: Librarians Surveyed by Main Functions in the Library (%)

Main Function	Percentage (%)
Reader's services	20.8
Cataloging, classification	17.1
Administration	18.1
Acquisition	5.5
Information retrieval	2.7
Indexing	4.1
Multiple	29.4
Other	2.4
Total	100.0

Over 77% of our librarians are women. In this respect we do not differ much from the picture in other countries. Understandably, too, almost one-half of our female graduates (44%) are employed only part-time. The easier access to part-time employment is one of the advantages of being a librarian in Israel. Almost all the men work full-time. From a cross tabulation (not shown here), it also follows that the concentration of administrative functions among men is much higher than among women (29% against 15%), while the concentration on reader's services is larger among the latter (9% against 24%). This too does not seem to be a feature that is unique to Israel.

Table 4: Librarians Surveyed by Gender and Extent of Employment

	Male		Female		Total	
Employment	Number	%	Number	%	Number	%
Full-time	57	87.7	129	56.3	186	63.3
75% (of full)	3	4.6	49	21.4	52	17.7
Half-time	5	7.7	51	22.3	56	19.0
Total	65	100.0	229	100.0	294	100.0

Typically, our librarians' previous education was in the humanities. Many of the graduates in social sciences come from sociology; some of them are teachers. The science majors among our graduates come mainly from chemistry or the life sciences in which the chances for employment are relatively poor.

Table 5: Librarians Surveyed, by Area of Previous Studies (%)

Previous Studies	Percentage (%)
Humanities	79.4
Social Sciences	10.6
Sciences	7.8
Law	1.8
Other	0.4
Total	100.0

Although 76% of our graduates come to library school after having obtained only a bachelor's degree, over 22% already had graduate degrees before joining the school. This, incidentally, is one of the advantages of our graduate diploma: it allows such candidates to retrain as librarians without going through another master's degree.

Table 6: Librarians Surveyed By Previous Degree (%)

Previous Degree	Percentage (%)
Bachelor	76.4
Master	16.1
Ph.D.	6.2
Other	1.4
Total	100.0

More than 71% of our graduates are over 40 years of age. While it is difficult to find truly comparable data, one has the impression that this is much higher than the percentage of librarians over forty in other countries (see e.g.[3]). Very few of our graduates

[3] Hegg, J. Continuing Education: A Profile of the Academic Librarian Participation. Journal of Library Administration. 6(1), 1985: pp. 45-63.

are still in their twenties, possibly because few people turn to this profession right after graduation from a university.

Table 7: Librarians Surveyed by Age (%)

Age	Percentage (%)
25-29	1.7
30-39	27.1
40-49	50.9
50+	20.3
Total	100.0

The median time since graduation in our survey was about 14 years. It must be borne in mind that seniority as a librarian is often quite a bit longer than the time since graduation, because many of the graduates worked as para-professional librarians before going through our course.

Table 8: Librarians Surveyed by Time Since Graduation (%)

Years Since Graduation	Percentage (%)
0-4	7.9
5-9	17.8
10-14	30.8
15-19	27.4
20-24	11.6
25+	4.5
Total	100.0

Turning now to our second subject, the issue of continuing education (CE), one finds that 91.4% of the graduates state that CE is important and 82.2% think that CE is necessary in this profession. On the other hand, 48.6% say that there is a danger that a situation of "over-qualification" might occur. On the whole, 45.5% of the graduates express opinions favoring CE on the

first two questions and at the same time do not express any fear of over-qualification. These cases might be considered high on a "score of awareness of CE."

The areas in which a need for CE is felt reflect mainly the wish of librarians to update themselves with respect to the use of modern technology: over 75% feel the need for CE in "computer" and 58% in the related area of information retrieval. The next area, audio-visual material, interested only 22% of the respondents. Managerial and administrative skills, systems analysis, and manpower management are mentioned by about 21% each. User education is mentioned only in 16% of cases -- a fact which is puzzling for those familiar with the situation in Israeli libraries.

Table 9: Librarians Surveyed by Areas in which They Feel A Need for Continuing Education (CE) (%)

Areas	Need Felt	Need Not Felt	Total
Computers	75.2	24.8	100.0
Information retrieval	57.7	42.3	100.0
Audio-visual	22.0	78.0	100.0
Systems Analysis	21.3	78.7	100.0
Manpower Management	20.6	79.4	100.0
User Education	15.6	84.4	100.0
Other	12.6	87.4	100.0

The preferred medium for CE are short courses (74%) followed closely by field visits (60%). Almost one-half (49%) mention conferences and meetings as suitable media for CE.

Table 10: Percentages of Librarians Selecting a Given Type of Continuing Education (CE) (%)

Given Type of CE	Percentage (%)
Short Courses	74.2
Field Visits	59.8
Conferences, Meetings	48.8
In-Service Training	36.4
Other	37.5

What bodies are viewed as responsible for the organization of CE activities? The answer to this question was surprising: both professional associations and library schools -- with 71% each -- were viewed as responsible for CE. The employers, with 49%, came up as a poor third.

Table 11: Librarians Surveyed by Body Seen as Responsible for Continuing Education (CE) (%)

Body Seen As Responsible	Percentage (%)
Professional Associations	71.3
Library Schools	70.8
Employer	48.6

The practical implications of this finding will be discussed at some length in the next session.

Discussion

The collective portrait of the graduates of our library school raises several questions concerning manpower planning and management in our profession. The first of these questions has to do with the impact of the present economic crisis in the universities. It is only too likely that the crisis will lead to a reduction of the professional staff in university libraries. The elderly age structure of our professionals will make it easy to reduce positions by pensioning, without really generating unemployment. It follows, therefore, that the labor market for academic librarians is likely to shrink in the future.

At the same time the development of the Israeli economy, and in particular that of high technology industries, is resulting in a growth of the market for professionals in special libraries and information centers. Indeed, the relatively small percentage of professionals in these areas is something of an anachronism. Needless to say, the training in our schools will have to match the skills needed in these fields.

The situation with respect to public and school libraries cannot be fully understood on the basis of a survey of the Jerusalem graduates only. When the Haifa University library training programs were started it was generally accepted that these were meant mainly for the public and school library system. Whether the graduates of Haifa University do in fact find employment in these systems will have to be investigated in a separate survey. In fact, such a survey is about to be completed. In any case, the low salary scales in the public library system, based on their tradition of non-academic, para-professional people, have deterred many young graduates from entering into the field, although there are many jobs available.

The functions performed by our graduates are also of a mainly "traditional" nature which may not fit the range of tasks of tomorrow. Together with a shift of emphasis from academic to special ,libraries and information centers there will have to be a shift towards the use of modern information technology.

Our school has indeed become aware of the need to readjust our training and has prepared a development program for the nineties which emphasizes information science, the economics of information, as well as the user needs and communication. The fact that so many of our students come to us from a background in the humanities, presents an additional challenge for the educational skills of our faculty. The system instituted a few years ago, whereby every student follows a specific "track" of specialization (in his second year of studies), such as information science, management, and social studies, etc., is also helpful in focusing the studies on more specific job requirements.

The need to readjust oneself to the exigencies of the computer era is apparent from the reaction of our graduates to the questions on continuing education. Computer literacy and information retrieval are very high on their list of priorities. Interestingly, the responses of our survey place the responsibility for CE squarely on the shoulders of the library schools and their professional associations. Actually, a few years ago our school set up a very active Continuing Education Unit. In several instances, this unit has offered tailor-made courses following specific requests of employers (such as a course for public library managers requested by the Ministry of Education, Division for Libraries and Information Centers).

For the time being, there is apparently still a shortage of professionals on the market. Librarians who are pensioned or dismissed, before retirement time and even after, have no difficulty in finding alternative employment. Furthermore, professionals from other fields in which there is a surplus of manpower (e.g., chemistry, biology) are retrained as information specialists on an individual basis or under a fellowship-salary system of the Ministry of Labor and Welfare for one year (through a specially designed program at Bar-Ilan University). One hopes that, by being constantly aware of ever-changing job requirements in the field and by using flexible and imaginative educational planning -- both for our degree programs and for CE -- one shall be able to avoid a surplus of professionals in our discipline.

Systematic predictions are certainly a prerequisite of good manpower planning. The survey we discussed here did not intend to replace such predictions. Instead, we tried to point out how, in a small country with no systematic planning mechanism, a survey such as ours yields sufficient indications to guide the policy of one library school.

EMPLOYMENT PATTERNS AND CURRICULUM DEVELOPMENT

F.E. WOOD
Department of Information Studies
University of Sheffield
Sheffield, U.K.

Introduction

The first part of this paper is based on three surveys; Hulme and Wilson (1988), Wood, Richardson, and Schur (1987), and Loughridge and Sutton (in press), of the employment patterns of graduates of the three taught Master's programs of the Department of Information Studies, University of Sheffield. These three Master's programs -- M.A. in Librarianship; M.Sc. in Information Studies; M.Sc./M.A. in Information Studies (Social Sciences)[1] -- lead to first professional qualifications in librarianship or in information studies. The surveys excluded those who had taken a Mature Entry Masters degree which is designed for those with qualifications in librarianship or information work and substantial professional experience.

The results of these surveys have been compared with those for earlier surveys carried out in the Department recording the employment of our graduates since 1965: Wood (1975); Wood (1981); Roberts and Bull (1983); and Roberts (1973). Some aspects of these comparisons are discussed later.

The surveys contribute to our regular course planning and review work by providing information on trends in employment and on what our graduates thought of the programs some time after they had graduated. While we do course reviews during the year, perceptions of what has been taught are likely to change as people see the relevance, or otherwise, of the course to the work they are doing.

The surveys provided information of greater relevance to the Sheffield Department of Information Studies than that gathered by White (1986), which was used by the Transbinary Group (1986) in its investigation of library and information studies education in the United Kingdom. Overall, the results of the Sheffield surveys

---

[1] The designation of the course was changed from M.A. in Information Studies (Social Sciences) to M.Sc. in Information Studies (Social Sciences) during the period surveyed by Hulme and Wilson (1988). This program will be replaced by an M.Sc. in Information Management program which starts in October, 1988.

are much more encouraging than those reported by White (1986), which were based on a small sample of former students of twelve of the seventeen United Kingdom (U.K.) library schools who graduated in 1978 (117 out of the approximately 1,000 students who graduate each year), and which, in addition, had a low response rate (47%).

All the Sheffield surveys used postal questionnaires sent to all who graduated during the time periods covered. Table 1 gives details of each of the three recent surveys.

Table 1: The Surveys

	M.Sc.	M.A.	M.A./M.Sc. (Soc. Sci.)
Graduated in:	79-85	79-85	81-84
Number of Years	7	7	4
Number Responding	95	105	46
Number of Overseas Students Incl.	11	...	3
Response Rate	91%	56%	84%

As can be seen, the M.A. survey covered a different time period than the others. Both the Information Studies surveys had high response rates, but the Librarianship response rate was less satisfactory, making it more difficult to draw firm conclusions for that program. Although there were strong similarities between the questionnaires used in the surveys there were variations, some of which are indicated. All the M.Sc. in Information Studies students have at least a first degree in a social science and the M.A. in Librarianship students are predominantly arts or humanities graduates.

First Destination

Table 2 shows the first destination of the graduates using similar categories to those used by the University Grants Commission (UGC) to show the first destinations of science higher degree students studying in the United Kingdom. It should be noted that this scheme was not used in the MA questionnaire so it is not possible to provide complete information for that course, although it is quite clear that the three groups form distinct populations as far as employment is concerned.

Table 2: First Destination

	M.Sc. (n=105)	M.A. (n=105)	M.A./M.Sc. (Soc. Sci.) (n= 46)
Industry and Commerce	44%*	2%	13%+
Civil Service/ Local Government	15%	50%**	26%
Universities/ Polytechnics	13%	22%++	7%
Colleges		13%	6%
Returned to U.K. Post	2%	n.a.	2%
Other Home Employment	7%	11%	11%
Research/ Further Acad. Study	9%	n.a.	21%
Overseas Employment	1%	n.a.	4%
Overseas, Returning Home	8%	n.a.	7%
Unknown, Temporary, or Unemployed	2%	n.a.	1%

* Nearly all industry
** Mainly public libraries
\+ Nearly all commerce
++ Mainly academic libraries
n.a. (information not available)

All except two of the 46 of M.Sc. in Information Studies students who entered 'industry and commerce', entered industry, especially the pharmaceutical and other chemically based industries. The nature of the companies where the other two graduates gained employment is unknown. Almost all the 13% of the M.Sc. in Information Studies (Social Sciences) graduates who entered 'industry and commerce', entered commerce. Very few of the M.A. in Librarianship graduates entered this employment sector.

'Civil service and local government' was the first destination for half the M.A. in Librarianship graduates, reflecting the large proportion which entered public librarianship. The 15% of M.Sc. in Information Studies graduates who entered this category of employment went mainly into the Scientific Civil Service or other scientific organizations within this category; only one person (1%) worked in a public library. Some of the M.Sc. in Information Studies (Social Sciences) graduates gained employment in public libraries, but more went into local government or other information services which fall within this category.

Of the 22% (23) of M.A. in Librarianship graduates entering 'universities and polytechnics', all but four worked in academic libraries. The remaining four became lecturers, (two in librarianship and information studies). Of the M.Sc. in Information Studies graduates entering 'universities and

polytechnics' very few gained employment as academic librarians. The posts they gained were varied and included those with titles such as program advisor (in computer services), library automation officer, industrial liaison officer, lecturer and research associate (since paid researchers in academic institutions come into this employment sector rather than 'research and further academic study).

The number of M.Sc. in Information Studies (Social Sciences) graduates entering 'research and further academic study' is boosted by a large intake in one year (five out of ten graduates in 1981/82 went into research). Some graduates from the courses are likely to begin research for a higher degree every year.

The 'unknown, temporary employment, and unemployed' figures for the two courses where this was checked were very low and our other records confirm this for all courses.

First Destinations: Comparison with Earlier Sheffield Surveys

The most striking differences between the first destinations of M.Sc. in Information Studies graduates 1965-1973 (Wood, 1975), and those in the current survey are the increase in those entering 'industry and commerce' from 30% to 44% and the decrease in those entering'universities and polytechnics' (in the earlier survey: 'universities', 'technical colleges and further education') from 37% to 13%. This change was already apparent in the 1974 to 1978 graduates (Wood, 1981); 33% of whom entered 'industry and commerce' and 22%, 'universities', and 'polytechnics and colleges'.

These differences may be the result of a decline in the number of posts in academic libraries because of their financial state, of changes in the interests of M.Sc. graduates, of changes in the M.Sc. in Information Studies teaching program, and of an increase in the number of information posts in industry. Another change is the decline in the numbers of those who are seconded to study from nine in the earlier survey to two in the later survey, which may be a reflection of a worsening in the financial conditions of some institutions.

First Posts

As Table 3 shows, almost all the graduates, regardless of course, went into first posts within the broad field of librarianship and information work. The distinction between librarianship and information work is difficult to make. However, based on job titles, it seems that almost all of the M.Sc. in Information Studies graduates went into 'information posts', and most of the M.Sc. in Information Studies (Social Sciences) graduates went into 'information posts' (but 28% went into 'library posts'; the 22% who went into 'research' were not included). Almost all of the M.A. in Librarianship graduates went into 'library posts'.

Table 3: First Posts and Present Employment

	M.Sc.		M.A.		M.A./M.Sc. (Soc. Sci)	
	First (105)	Present (100)	First (105	Present (105)	First (46)	Present (46)
Library/ Information	94%*	71%	96%	84%	90%+	80%
Other	6%	22%@	4%	12%	9%	9%
Not Working	...	7%	...	3%	...	7%

* Nearly all information posts @ 11% in the computer field
\+ Nearly all library posts

The 'Social Sciences' results can be compared with those for the earlier survey of this program (Roberts and Bull, 1983), which found that 56% of the graduates had found employment in libraries and 44% in other types of information work.

Present Employment

While first posts were almost exclusively within the broad field of librarianship and information work, for the M.Sc. in Information Studies and the M.A. in Librarianship graduates, there was a trend to move into posts which are outside the broad field of librarianship and information work (and some graduates defined that field very widely, including in it such posts as programmer and systems analyst, research associate [computer information system], library programmer, computer support officer [university library], and information systems manager), as Table 3 illustrates.

The 'other' category of the M.Sc. in Information Studies graduates included 11% who were working in the computer field. The remainder included such information related work as editorial work and drug registration. An examination of job titles and descriptions showed that 31% of the Sheffield M.Sc. in Information Studies graduates were working outside 'traditional information work', mainly in information technology related posts, compared to 20% of the White (1986) sample after a longer period since graduating, thus contradicting the statement, that, "in general there is virtually no movement from traditional to emerging sectors" (White, 1986).

Those not in paid employment were mainly involved in domestic duties.

Mobility

The intake to the Department is on a national and international basis; it does not have a predominantly local intake. About a third of all posts gained by the graduates surveyed were in London or the Southeast of England

The M.Sc. in Information Studies and M.Sc. in Information Studies (Social Sciences) graduates stayed in their first posts for 20 to 22 months on average, while the M.A. in Librarianship graduates stayed longer in their first posts, from 24 to 36 months.

Excluding the most recent year's respondents, 86% of the M.Sc. in Information Studies graduates, 71% of the M.A. in Librarianship graduates, and 54% of the M.Sc. in Information Studies (Social Sciences) graduates had moved out of their first posts. The last figure represents only three years of graduates compared to six years for the other two groups. Many graduates had changed posts several times since leaving the Department while a third of the M.Sc. in Information Studies graduates had changed sector of employment (using the UGC categories) as well as changing jobs, thus indicating a high level of employment mobility in this population.

Duties: First Posts

Because of differences in the questionnaires used in each of the three surveys, it is difficult to compare the duties undertaken. However, aspects of direct assistance to users were the most frequently listed duties in first posts for respondents in all groups. The next most frequently listed duties for the librarianship and social sciences graduates were technical processes such as cataloging, classification, indexing and selection, while, for the scientists, aspects of computer use came second. Twenty-three percent (23%) of the M.A./M.Sc. in Information Studies (Social Sciences) graduates said they carried out literature and information searching online, but 75% of the M.Sc. in Information Studies graduates said they searched for bibliographical information online and 63% for data online.

Duties: Current Posts

In current posts other than first posts, direct assistance was less frequently listed as a duty while management and education and training were more frequently mentioned. Computer use was also mentioned more frequently, to the extent that 93% of the U.K. M.Sc. in Information Studies graduates listed some use of computers (excluding online searching) as a function. Only 39% of the M.Sc. in Information Studies graduates carried out online bibliographic searching, and, 33%, online searching for data; about half the number doing this work in first posts.

Duties: Comparisons with Earlier Sheffield Surveys

The earlier surveys of the M.Sc. in Information Studies graduates, (Wood, 1975; Wood, 1981), did not distinguish between first and current posts. Apart from three areas, the results match those of Wood, Richardson, and Schur (1987), fairly well. As might be expected, these concern the use of computers either directly or indirectly.

The first is the increase in online bibliographic searching from 20% in the first survey to 53% in the second survey. Interestingly, there was no further increase in the percentage doing this work; 53% of the respondents to the third survey also carrying out online bibliographic searching. Use of non-bibliographic databanks was listed by 14% of the respondents in the Wood (1975) survey; and, in the third survey, by 63% for first posts and 33% for other current posts (Wood, Richardson, and Schur, 1987).

Computer applications (other than online searching) were listed as duties by 27% of those in the earliest group, 51% of the second group, and 78% of the last group.

Views on Programs

The teaching programs undergo a major revision every five years and are continually amended in between, so graduates were commenting on programs which have been changed to a greater or lesser extent since they were in the Department. In particular, respondents suggested that business information be given greater emphasis and that information management should be taught. An elective course is now offered on business information while a new Information Management teaching program will be introduced in October.

Most comments were favorable as the summaries of the main comments given in Table 4 show. Several respondents commented that more practical aspects of management and computer applications should be covered and that more practical work should be included, in addition to the substantial amount already provided. The respondents also emphasized the importance of keeping up with information technology.

Table 4: Views of the Programs

M.Sc. Respondents

-- Almost all the comments were favorable.
-- The balance between the components was about right.
-- The balance between the generalized and the specialized was about right.

-- They wanted a greater emphasis on practical aspects in the management and computer courses.

The most useful aspects in their careers.
All. Innovative thinking. The framework given. The information technology.

The most useful subjects.
Online. Computers. Information resources.

The aspects most useful in their professional development.
Dissertation. Information technology.

Suggestions for the future of the M.Sc. program.
Keep up with computer applications.
Increase the practical aspects.

M.A./M.Sc. (Social Sciences) Respondents.

-- Most were satisfied with the program.

The most useful subjects.
Online. Survey techniques. Information resources. Computer applications.

Areas they wanted strengthened.
Online. Evaluation of software packages. Report writing. Administration of information services. Practical management. Data protection/copyright. Business information. Presentation skills.

Their suggestions for the future of the M.Sc. (Social Sciences) program.
Less theory. Monitor job market. Keep up with IT.

Table 4: View of the Programs (continued)

M.A. Respondents.

-- Thought the program gave a good grounding in core skills and an awareness of wider issues and longer term aspects.

Aspects most useful in their first posts.
Management. Cataloging and classification. Computing. Academic libraries option. Resources. Public libraries option. Library automation. Visits.

Aspects most useful in their second/current posts.
Cataloging and classification. Management. Computing. Library automation. Resources. Public libraries option.

Dissertation.

Areas some respondents felt could be less emphasized.
Management. Cataloging and classification.

Areas some respondents felt were irrelevant.
Cataloging and classification. Management. Resources. Historical bibliography. Survey methods and statistics. Computing. Academic library option.

Areas respondents felt could be more emphasized.
Practical aspects in resources and management (which some thought too theoretical and too abstract).

Summary

The surveys showed that, although there is some overlap, the graduates of the different courses form distinct populations as far as employment is concerned and that the range of posts entered is very wide. The M.A. in Librarianship graduates entered mainly public and academic librarianship. The M.Sc. in Information Studies graduates entered a wide variety of information posts, many with a high information technology component, and many in industry, including the information industry. The M.Sc. in Information Studies (Social Sciences) graduates entered a wide variety of information posts (some in libraries) in commerce, local governments and civil service information services, and other sectors of employment. There was a high level of mobility. Substantial numbers entered employment in 'emerging markets' for librarianship and information studies graduates, in their second or later posts.

Over the years there has been a decline in the importance of cataloging and classification as duties and an increase in the involvement with computers, including online searching. In first posts, functions associated with users are most frequent, but in subsequent posts, management and education and training functions are cited more often.

The Surveys and Curriculum Development

The main value of the surveys is in confirming and quantifying employment patterns for past Sheffield graduates. The patterns shown reflect the nature of our past students including their previous qualifications and experience, and the education provided at Sheffield. If these characteristics remained the same, and the information world itself was not changing, then greater reliance could be placed on the surveys as predictors of future patterns. But, the information world is changing, most notably in the use of information technology; our teaching also has to change; and, to

some extent, the nature of our students is changing. Therefore, the graduate survey is only one technique which has been used to provide input to our curriculum design process.

Our students review the courses given each term, and at the end of the year, by anonymous questionnaire, and by discussion in each program group. The staff and student committee provides an additional channel for feedback about the teaching programs.

The teaching staff are divided into groups concerned with teaching particular programs and also into functional groups concerned with teaching in particular subject areas, such as sources of information, computers, information storage and retrieval, and management. These groups meet to discuss the updating and revision of the programs, especially when our major five yearly review is in progress. The teaching staff also meet as a whole to consider curriculum changes.

Each of the teaching programs has invited senior professionals (for example, managers of information services in industry and commerce, including the information industry, and academic and public librarians) to discuss topics related to curriculum development. The external examiners of the programs, all senior information professionals, also provide valuable input to our curriculum review activities. The Department also has a Liaison Committee which meets annually on which the University and the information professions are represented. Discussions have also been held with representatives of cognate departments in the University, such as Computer Science and Management and Economic Studies, and with the University's Academic Development Committee, about the teaching programs.

The professional bodies which validate the teaching programs, and give exemptions to their examinations for our graduates, that is the Institute of Information Scientists and the Library Association, provide another useful input from outside to our planning activities. The Department has also been subject, with other library and information studies departments, to review by the Transbinary Group (1986) and the UGC Social Sciences Committee (late 1987).

The Department carried out a survey of job advertisements and job descriptions sent by employers. This confirmed that there are far more opportunities for those with information handling skills than simply employment in the traditional areas of public, academic, and special librarianship and information work. This technique was later adopted by the Transbinary Group.

Changes to the Teaching Programs

The results of all these studies and discussions were taken into account in planning the changes which are to be introduced into the

teaching programs which start in October, 1988. These programs have been designed to provide employers with graduates who have the information skills presently required for a wide range of posts and who, in addition, are sufficiently flexible to adapt to changing employment opportunities.

However, these programs are not just vocational, they are also educational, so that other aspects have to be taken into account. Teaching programs at this level should not be considered (as they sometimes are by employers) as training to do particular tasks. They should provide graduates with the breadth of vision to be able to see what they do in the wider context and the flexibility to adapt top changing circumstances. Research is essential for the continuing development of the information field, and high level courses such as those at Sheffield provide a suitable education for future researchers and must continue to do so.

Two new teaching programs are being introduced, an M.Sc. in Information Management, and, in conjunction with the School of Management and Economic Studies of the University, an M.B.A. in Information Management. The first of these programs is designed for those graduates of any discipline who wish to gain information skills suited for work in a wide range of posts, but not especially libraries. The second of these, the Master's of Business Administration (M.B.A.) is for managers who wish to gain information skills. "Information skills" is one of four specializations offered in the Sheffield M.B.A. program.

There is a clear demand for graduates of the M.Sc. in Information Studies program who have both a scientific and an information background. It is believed that the demand for such graduates is likely to increase. Therefore, although further improvements to the program are to be made, the program itself remains. The M.A. in Librarianship program is at present unable to satisfy the demand for its graduates both from libraries and also from less conventional areas, and so this program too remains in an update form. While the number of library posts is not expected to increase, there are expanding opportunities in other areas for M.A. in Librarianship graduates.

Within the programs, there will be an even greater emphasis on the applications of technology. Practical computer facilities are being greatly enhanced. Extra funds for this purpose have been allocated following the re-classification by the UGC, of information studies as a computer science for equipment funding purposes. Greater emphasis will be placed on management and policy with particular emphasis on the practical management skills likely to be required in first posts. The Business Information course introduced in 1987, will feature in the revised teaching programs.

Conclusion

This paper describes how one information studies department has tried to identify the manpower needs of employers of information professionals and the opportunities for those with information skills outside what is traditionally considered to be the information field. Special emphasis has been placed on identifying trends to facilitate planning for the future.

REFERENCES

1. HULME, A. J. and T.D. WILSON. (1988) Professional Education and Subsequent Careers in Library/Information Work; a Follow-up Study of Former Students on the MA/MSc Information Studies (Social Sciences) Course at the University of Sheffield. Journal of Information Science. 14 (1988): pp. 109-117.

2. LOUGHRIDGE, B. and J. SUTTON. (1988) The Careers of MA Graduates: Training, Education and Practice. Journal of Librarianship 20, 4 (October, 1988): pp. 255-269.

3. ROBERTS, N. (1973) Graduates in Academic Libraries: a Survey of Past Students of the Postgraduate School of Librarianship and Information Studies, Sheffield University 1964/65-1970/71. Journal of Librarianship. 5 (1973): pp. 97-115.

4. ROBERTS, N. and G. BULL. (1983) Professional Education and Practice: a Survey of Past Students (MA Information Studies [Social Sciences]) of the Postgraduate School of Librarianship and Information Science, University of Sheffield, 1973/74 to 1979/80. Journal of Librarianship. 15 (1983): pp. 29-46.

5. TRANSBINARY GROUP. (1986) Report of the Transbinary Group on Librarianship and Information Studies. (unpublished).

6. WHITE, B. and associates. (1986) The Impact of Library and Information Studies Education on Subsequent Career Progression. British Library Research Paper 6. London, British Library, 1986.

7. WOOD, F. (1975) Scientists in Librarianship and Information Work. Journal of Librarianship. 7 (1975): pp. 31-48.

8. WOOD, F. (1981) Scientists in librarianship and Information Work, II. Journal of Librarianship. 13 (1981): pp. 119-130.

9. WOOD, F., D. RICHARDSON, and H. SCHUR. (1987) Scientists and Information Work: the Careers of the 1979-1985 MSc Graduates from the Department of Information Studies, University of Sheffield. Journal of Information Science. 13 (1987): pp. 297-306.

SESSION VI

METHODOLOGICAL ISSUES OF ASSESSING MANPOWER IN THE INFORMATION SCIENCES AND LIBRARIANSHIP

26 August 1988

Chair: Iraset PAEZ-URDANETA (Venezuela)

USE OF THE DELPHI METHOD IN LIBRARY AND INFORMATION SCIENCE CURRICULUM DEVELOPMENT AND REVISION IN DEVELOPING COUNTRIES

J. ROBREDO
T.M.G. BOTELHO
University of Brasilia
Brasilia, DF Brazil

A.R.E. CORTE
Librarians Association of the Federal District
Brasilia, DF Brazil

Introduction

The results of a Delphi study carried out by a group of workers of the library school of the University of Brasilia were used as a support to detect some trends in the manpower market of the library and information professionals in the Federal District, and in the West-Central Region (i.e., the geographical area of influence of the University of Brasilia).

The results were also used as a basis to identify lacks and failures in the present professional background and to orientate the work of the group responsible for the development of the new curricula in librarianship, documentation, and information science at the undergraduate and graduate levels in the school.

Education and Training in Librarianship in Brazil

The history of the professional education in librarianship, in Brazil, can be divided into three phases (1-5).

The first one covered the period 1879-1929, under the leadership of the National Library, in Rio de Janeiro, when French influence was predominant. The courses offered by the National Library suffered several interruptions and successive modifications. They were initially oriented to the training of professionals for the library. After an interruption from 1922 to 1931, the courses were re-initiated, maintaining their european orientation until 1944.

The second phase, from 1929 to 1962, was characterized by the innovating influence of a course created in the Mackenzie Institute (now Mackenzie University), in Sao Paulo, under American orientation. Also worth mentioning is the creation in the forties of a course of librarianship under the auspices of the Department of Administration for the Public Service (Departamento Administrativo do Servico Publico-DASP), which followed the American model introduced by the Sao Paulo course. Its success and favorable reception determined, in 1944, a new reformulation

of the course offered by the National Library. At the same time, the National Book Institute (Instituto Nacional do Livro-INL), created in 1937, promoted, for some years, the organization of occasional courses in several regions of the country, some of which would later become regular courses (such as those of Belo Horizonte and Curitiba). In the fifties, a progressive decentralization of the library courses took place. The number of courses in the early sixties increased to ten, and were dispersed throughout the region.

The third phase was characterized by the uniformity of the courses, all of them based on the guidelines for a core curriculum established by the Decree n. 550 in February, 1962. For the first time, a topic on documentation was included in the curriculum, through the influence of UNESCO and the Brazilian Institute for Bibliography and Documentation ([Instituto Brasileiro de Bibliografia e Documentaçao-IBBD] founded in 1954). Library professionals gained the status of university professionals, with a bachelor degree at the end of their studies in the different courses. The number of courses had grown from ten to eighteen; the number of students grew from 400 to about 1500.

In the seventies, eleven new courses were created. During the same period, the first post-graduate courses to train teachers of the new courses were also created. These courses stressed the importance of the new concepts related to documentation and information science. Also during this period, the first Brazilian serial on librarianship initiated publication. At present, four titles of fair professional level are regularly published.

Thirty-one (31) library schools now exist, from which about 800 new professionals graduate a year. Five post-graduate courses in information science, librarianship, and documentation are provided at the master's level, and about 15 new masters graduate from these programs yearly. A master's and doctoral level program in communication science with an optional subject area in librarianship, graduates some new masters or doctors every year.

It is interesting to observe the rapid growth of the library professions in Brazil. More than 16,000 graduates, not counting about 2000 information graduates of other schools, work in documentation centers and information services, or teach in several universities. This growth is not only the result of the dynamism of Brazilian librarians, but also of the high demand for information professionals since the early sixties. The demand, even now, during an economic crisis, does not seem to have collapsed as strongly in the information sphere as it has in other professional areas. A rough estimate indicates that the unemployment rate for librarians is one of the lowest observed among other university-level professionals (1% to 5% for the different states of the country).

The New Curriculum Development

Since the mid-sixties, consequent to the rapid growth of the profession and of the proliferation of courses still following models imported some years before, some have called attention to the need to improve installations and equipment in schools. Without these improvements, proper implementation of newly defined programs is difficult. Russo[5] (previously cited), underlines, "the improvisation of the teachers, the lack of specialization, ... and the hiatus between the schools and the community."

According to Mueller[1], generalized dissatisfaction with the librarianship curricula was expressed, during the next 10 years, through recently created journals. In the sixties, the pressure on schools to develop new courses increased. Papers, meetings, working groups, and reports multiplied as a result of a general awareness that the program orientation needed to change. Traditionally, library programs had overemphasized the humanities, while practically ignoring new technological advances being introduced, in other countries, into library and information science school curricula.

The Brazilian Association of Library and Documentation (Associacao Brasileira de Escolas de Biblioteconomia e Doçumentaçao--ABEBD) played a significant role in curriculum revision. In 1971, ABEBD promoted an in-depth study on updating the curriculum. In 1980, a special seminar on curriculum development was held in Brasilia under the auspices of the Organization of the American States, through a project funded to train teachers and professionals in librarianship and documentation. A working group, coordinated by the Library School of the University of Brasilia, was created to elaborate a proposal for a core curriculum.

Supported by the Secretary of University Studies (Secretaria de Ensino Superior -- SESU) of the Ministry of Education, the working group, that same year elaborated a final proposal and submitted it to the Federal Council of Education (Conselho Federal de Educaçao -- CFE). After more studies and consultations, and after modifications were made (not always happily) to the original proposal, a new core curriculum at the undergraduate level was approved for Brazilian library schools in September, 1982[6]. The new core curriculum (see Figure 1), was to be used as a frame of reference by each school engaged in curriculum revision.

The New Curricula of the Library School of the University of Brasilia at the Undergraduate and Graduate Levels

Within the context described the previous discussion, the Library School of the University of Brasilia created a special study group to prepare a proposal to develop its curriculum, at the

undergraduate level. Aiming for contributions from authorities on the information manpower market over the next several years, a Delphi study, coordinated by one of the authors, was carried out by a group of teachers of the school[7]. This study covered the Federal District area and limited itself to special libraries and information centers, predominating in the area.

Figure 1. The new core curriculum accredited by the Federal Council of Education in 1982 for undergraduate library courses.

General Background Subjects

Major Topics and Subtopics

Communication
Social, political, and economic aspects in contemporary Brazil
History of the Culture

Instrumental Subjects

Major Topics and Subtopics

Logic
Portuguese language and literature
Modern foreign language
Research methods and techniques

Professional Training Subjects

Major Topics and Subtopics

Information applied to librarianship
Production of knowledge records
Bibliographic control of knowledge records
Dissemination of information
Library management

The work was extended some months later, by two of the authors, to all the West-Central Region (Federal District and the states of Goias, Mato Grosso, Mato Grosso do Sul, and Rondonia) and included all kinds of libraries (school, public, academic, and special)[8]. The results of this study confirmed and complimented those of the previous work, and were used to support the elaboration of a proposal for a new master's program in librarianship and documentation. This program had been created in 1978, and its curriculum had remained the same since its 1982

accreditation by the Federal Council of Education. Under the supervision of the coordinator of the post-graduate program, a representative group of students and alumni graduated as master's by the school, cooperated in the elaboration of the final proposal submitted to the faculty for approval and transmitted to the University council by the end of 1987.

Results of the Delphi Study

The literature, in developed countries, abounds with papers on Delphi studies. This literature discusses their application in the identification and forecasting of information needs which are used in planning national manpower development programs. In developing countries, in contrast, very little literature exists which covers the use of the Delphi method to identify the qualifications demanded of librarians and information specialists in the job marketplace. Other than the two previous works completed by the authors, little information could be found on the use of the Delphi method to inform decisions regarding curriculum revision and development. Reference to some key papers can be found in their respective publications, in which the methodology is described in detail[7,8].

The items submitted to (or suggested by) the library and information specialists interviewed (weighted as they each proposed) in the first and second study respectively, are summarized in Table 1.

Table 1: Items Submitted to or Proposed by Information Specialists Interviewed for Inclusion in the Curriculum

To determine weights, respondents rated each item as follows: 1 -- without interest; 2 -- of little interest; 3 -- of some interest; 4 -- of interest; 5 -- of high interest.

Items/Subjects	Weight 1st--Survey--2nd		Mean Value
Management of Libraries/ Information Systems	5.000	4.942	4.971
User Studies	4.875	4.833	4.854
Networks/Cooperative Systems	4.843	4.750	4.797
User Training	...	4.794	4.794
Reference Sources/Services	4.688	4.833	4.761
Social Aspects: Librarianship/Information	4.643	4.672	4.660
Classification; Indexing; Documentary Languages	4.938	4.364	4.650
Information with Public Utility	...	4.643	4.643

Table 1 (Cont'd)

Public Libraries	...	4.611	4.611
Planning of Library Buildings	...	4.611	4.611
School Libraries	...	4.577	4.577
Integrated Approach to Information Processes; Information Transfer; Telecommunication; New technologies; Information industry	4.438	4.672	4.560
Foreign Languages	4.375	4.700	4.540
Organization	...	4.540	4.540
Marketing	...	4.540	4.540
Library Planning	...	4.540	4.540

Items/Subjects	Weight 1st	Survey 2nd	Mean Value
Decision Support Systems; Statistical/Numerical Data	4.250	4.726	4.490
Special Information Systems	4.508	4.396	4.451
Research Methodology	...	4.441	4.441
Government Publications	...	4.417	4.417
Information Theory	4.600	4.152	4.376
Informatics; Automation of Documentary Processes and Services	4.125	4.611	4.375
Project Management	...	4.342	4.342
Statistics; Statistical Applications in Libraries	4.178	4.395	4.287
Academic Libraries	...	4.283	4.283
Professional Associations	4.143	4.409	4.276
General Culture	3.873	4.643	4.260
Technical Processes; Bibliographic Description	3.875	4.577	4.230
Public Relations; Psychology	3.938	4.433	4.186
Editing; Publishing; Standardization	3.563	4.577	4.070
Theory of Knowledge	...	4.060	4.060
Programming Languages	...	4.056	4.056
Software for Libraries	...	4.036	4.036
Advanced Education and Training Techniques	4.000	4.036	4.018

Table 1 (Cont'd)

Communication Theory	...	3.950	3.950
Technological Information	...	3.875	3.875
Processing: Historical Documents	...	3.778	3.778
Microforms	3.929	3.548	3.739
Archives	...	3.717	3.717
Legislative Information	...	3.553	3.553
Book History	3.000	3.548	3.274

The New Curriculum at the Undergraduate Level

A first draft of the curriculum of the library course of the University of Brasilia, following the core curriculum approved by the Federal Council of Education in 1982 (see Figure 1), was elaborated in 1983[9]. After an in-depth study by the Faculty, and accreditation by a competent body, it is now being implemented in the school. Figures 2 and 3 show the structure and the credit allocation by subjects and topics of the new curriculum.

Figure 2. The New Librarianship Undergraduate Curriculum of the University of Brasilia

ADM: Administration Department
BIB: Library School
COM: Communication Department
GEH: Institute of Geography and History
LEL: Department of Letters and Linguistics

Typically, courses will earn 4 credits and class contact will total 60 hours.
Exceptions are noted in round and square brackets.

1. Courses Corresponding to General Background Subjects and Topics (mandatory)

Evolution of philosophical and scientific thought (GEH)
Communication theory (COM)
Mass culture and aesthetics
Principles of library history (LEL)
Librarianship and Brazilian society (BIB)

2. Courses Corresponding to Instrumental Subjects and Topics (mandatory)

Logic applied to documentation (BIB)
Statistics applied to librarianship and documentation (BIB)
Introduction to data processing (EST)
Portuguese language (LEL)

Figure 2 (Cont'd)

Foreign language (LEL)

3. Courses Corresponding to Professional Training Subjects and Topics

Mandatory

Introduction to librarianship and information science (BIB)
Editing techniques (BIB)
Book and library history (BIB)
Introduction to administration (ADM)
Organization (ADM)
Managerial processes and techniques (ADM)
Library organization and management (BIB)
Library planning (BIB)
User studies (BIB)
Collection development
Informatics applied to library processes (BIB)
Documentary informatics (BIB)
Introduction to bibliographic control (BIB)
Cataloging 1 (BIB)
Classification (BIB)
Information analysis (BIB)
General bibliography (BIB)
Special bibliography (BIB)
Brazilian bibliography (BIB)
Documentation (BIB)
Information Services 1 (BIB)
Seminar (90 class contact hours)
Supervised in-house training 1, 2
(18 credits; [270 class contact hours])

Electives

Reprography (BIB) (3 credits; 45 class contact hours)
Paleography (BIB)
Organization and processing of special materials (BIB)
(2 credits; 30 contact hours)
Archive techniques (BIB)
Bibliographic classification systems (BIB)
Cataloging 2 (BIB)
Research organization
Documentary languages (BIB)
Indexing and abstracting workshop (BIB)
Thesaurus workshop (BIB)
Information services 2 (BIB)
Brazilian libraries (BIB)

Elective courses in other departments

Figure 3. Credit Allocation and Class Contact Hours in the Librarianship Undergraduate Curriculum

Mandatory Courses

General background subjects.

5 courses	20 credits 300 hours

Instrumental subjects.

5 courses	20 credits 300 hours

Professional training subjects.

24 courses	106 credits 1590 hours (includes supervised in-house training 1,2)

Elective Courses

9 Courses (minimum)	about 36 credits 540 hours

Total	182 credits 2730 hours

Although the existence of pre-requisites for a few specific courses imposes a sequence of study in some subject groups or modules, the curriculum as a whole seems to be reasonably flexible. Topics in several courses can be assembled into modules suitable for different target groups. Figure 4 gives three examples of core module organization.

Figure 4. Examples of Modules
(═══ indicates pre-requisite)

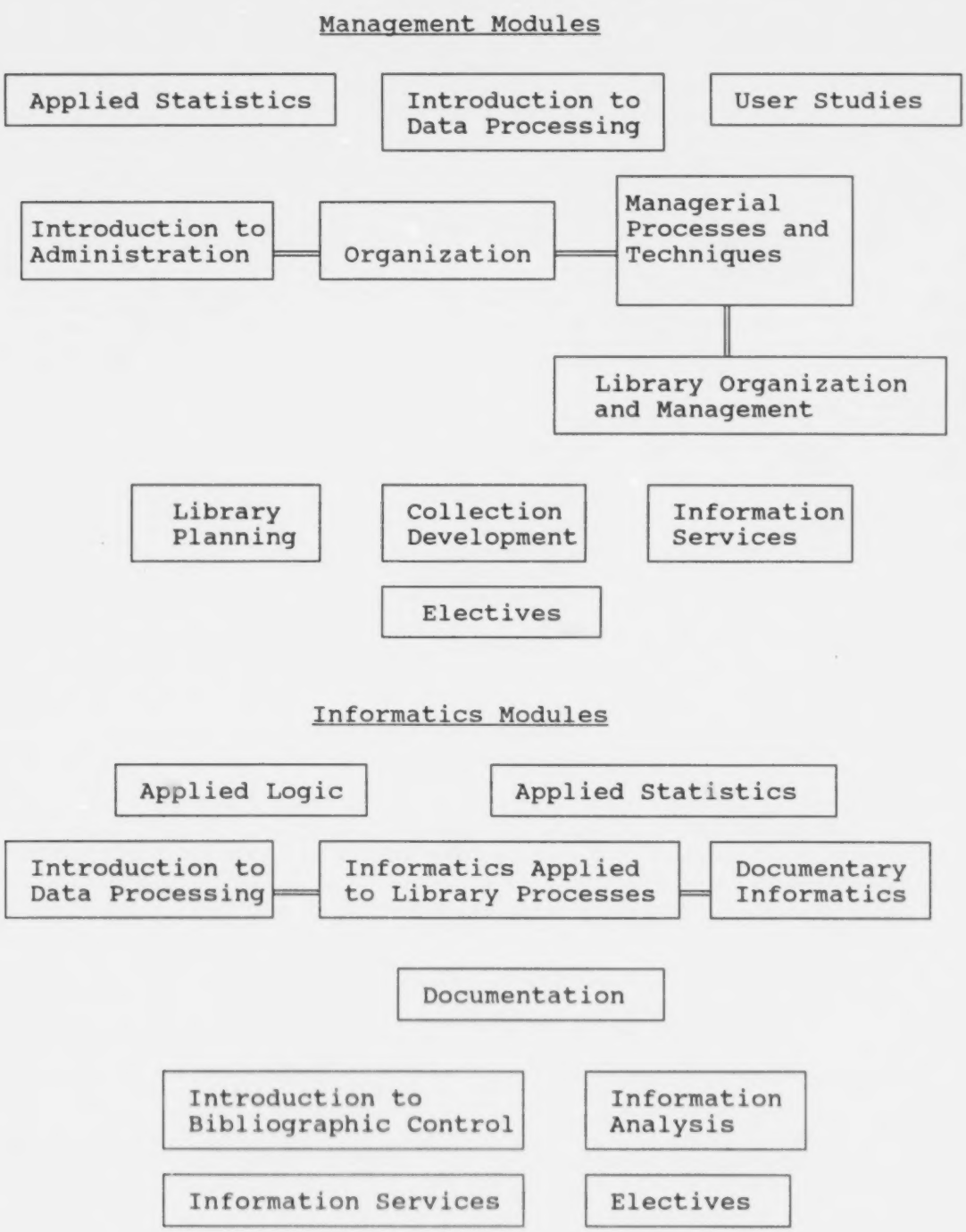
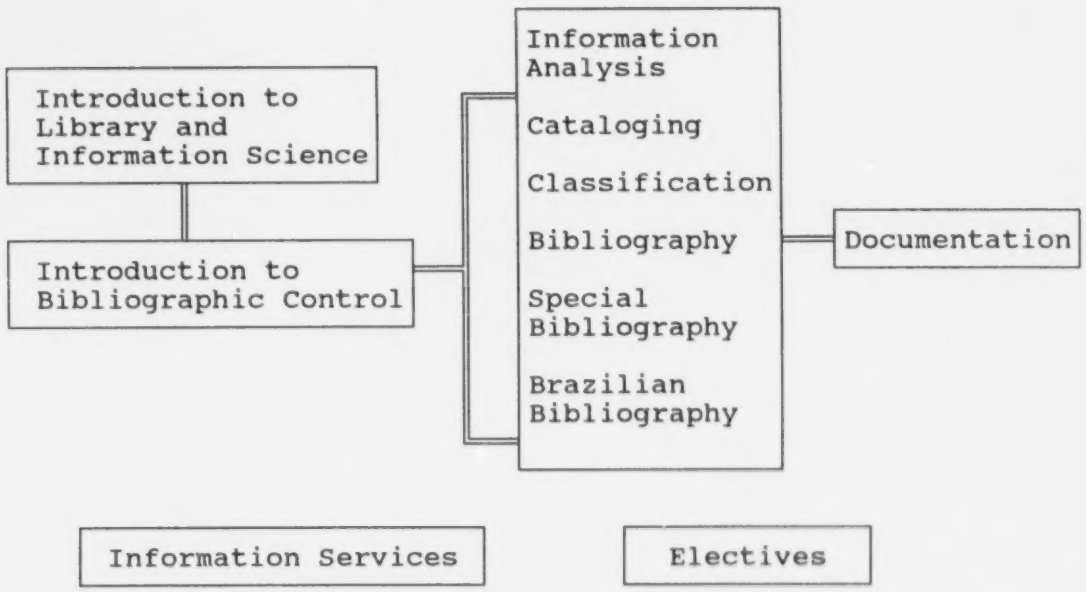


Figure 4. Examples of Modules (continued)
(═══ indicates pre-requisite)



The inclusion in the curriculum of elective courses (about 20% electives) makes it possible to give the whole course a predominant orientation, covering, for instance, the traditional topics of library science, or the newest aspects of the information technology. Figure 5 shows two examples of the curriculum with different orientations.

Figure 5. Examples of Curricula (partial) Oriented to Specific Target Groups

A. Curriculum (partial) Emphasizing Traditional Subjects/Topics.

Evolution of philosophical and scientific thought
Communication theory
Mass culture and aesthetics
Principles of literary history
Librarianship and Brazilian society

Introduction to librarianship and information science
Book and literary history
Editing techniques
Paleography
Archive techniques
Organization and processing of special materials

Figure 5. Examples of Curricula (partial) Oriented to Specific Target Groups (con't.)

B. Curriculum (partial) Emphasizing Technological Subjects/Topics

Communication theory
Librarianship and Brazilian society

Applied logic
Applied statistics
User studies
Introduction to data processing
Informatics applied to library processes
Documentary informatics
Introduction to bibliographic control
Information analysis
Documentary languages
Indexing and abstracting workshop
Thesaurus workshop
Documentation
Information services 1,2

The New Curriculum at the Graduate Level

The new curriculum at the post-graduation course (master degree in librarianship and documentation), which is now being implemented, offers two subject options: planning and management, and information resources. The curriculum structure and credit allocation are shown in Figures 6 and 7.

Figure 6. The New Librarianship and Documentation Graduate Curriculum of the University of Brasilia

Each course earns 6 credits and entails 60 class contact hours.

ADM:	Administration Department
BIB:	Library School

Common Courses

Information and society (BIB)
Research in librarianship and information science (BIB)
Education methodology (EDU)

Figure 6. The New Librarianship and Documentation Graduate Curriculum of the University of Brasilia (con't.)

Each course earns 6 credits and entails 60 class contact hours.

ADM: Administration Department BIB: Library School

Optional Modules

Option 1: Planning and management
Macro-planning for libraries/information systems (BIB)
Planning and management of information systems (BIB)
Systems theory applied to management (ADM)

Option 2: Information resources
Bibliographic description (BIB)
Information contents analysis (BIB)
Information sources and information retrieval (BIB)

Elective Courses

Advanced documentary informatics (BIB)
Quantitative methods in librarianship and information science (BIB)
Seminar in information science (BIB)
Librarianship education and training (BIB)
Compared librarianship (BIB)
Research practice in librarianship and information science (BIB)
Technical processes and services in libraries and documentation centers (BIB)
Special topics in librarianship (BIB)
Special topics in documentation and information science (BIB)
Information users (BIB)
Advanced studies in documentary languages (BIB)
Documentary information systems and networks (BIB)

Elective courses in other departments

Dissertation
(10 credits)

Figure 7. Credit allocation and Class Contact Hours in the Librarianship and Documentation Graduate Curriculum

Mandatory Courses

Common Courses	
3 courses	12 credits 180 hours
Optional Modules 1 or 2	
3 courses	12 credits 180 hours
Electives	
4 courses	14 credits 210 hours
Dissertation	10 credits
Total	48 credits

As in the case of the post-graduate course in librarianship, the existence of pre-requisites for registration in some specific courses, and the existence of some electives (about 35% of the credits required) offered by the school or by other departments of the university, give a structured sequence of study while allowing a great deal of flexibility.

Final Considerations

The present curriculum orientation of the bachelor's and master's courses of the Library School of the University of Brasilia satisfactorily fits all subjects considered 'of interest' and 'of great interest' by the professionals interviewed. These complete a profile of library and information specialists that is consistent with requirements set by the manpower marketplace over the next several years.

A comparison of the new curriculum's orientation with guidelines and recommendations formulated in other documents[10-14] shows the common preoccupation with reinforcing knowledge and professional skills with some major subjects as: information and society; planning and management; data sources and information resources; networks and cooperative systems; quantitative methods; user studies; and information technology.

It may in fact be said, that a general consensus exists regarding the principles guiding curriculum development and revision in library and information science, in developing countries. Nevertheless, no general receipt has been met until now, to successfully implement the changes demanded by new trends in terms of habits, skills, and mentalities of teachers. The awareness of a problem, although essential, does not mean the ability to solve it.

Between the consciousness of the need for teaching the applications of informatics to library processes and services and the ability of so doing (which requires both knowledge and practice), a significant difference exists. It is in this difference that one must seek the root of the problem to accelerate development. To move form "knowing that it has to be made" to the "will of doing it" to "making it", a critical mass of adequately trained human resources is indispensable.

If we remember Russo's alert[5], when she pointed out that "the improvisation of the teachers" and "the lack of specialization" as causes for the difficulties encountered during implementation of the core curriculum in 1962, we may fear that the next few years will be a brutal reminder of history.

The harmonious conciliation of essential aspects of education, tradition, and innovation with the requirements of the manpower market is a compromise effected by the university. Social values are both starting point and destination for educative action. Values express the proper aim for perfection of a society.

A UNESCO report, prepared under the coordination of Edgar Faure, published in 1972 and referred to by Botelho and Corte[8], states that education has less the finality of training youngsters and adults for a given activity, than to enhance their professional mobility and to awake the permanent desire for learning and for shaping the personality. Among the recommendations formulated in the document, we can mention the following:

> valorization of continuing education,
> the adoption of technological resources in education,
> the prioritization of teacher training,
> the orientation of education and training to individual and societal development needs.

Till now, international cooperation with developing countries has been generally concerned with assisting countries to formulate "what must be made" -- which, in many cases, they can do alone -- without providing the necessary support to accomplish actions promoting change, innovation, and development. Such support would lead to a massive effort to train human resources in well identified socio-economic environments.

The development of Brazil, as for many other countries, is strongly dependent on the availability of human resources.

Some hope would be permitted, if, for the next several years, international organizations and library and science schools of the developing countries worked together to design an accelerated training and refreshment program for teachers. For that, keep in mind that the technological gap between northern and southern countries is even wider than it was in the sixties.

REFERENCES

1. MUELLER, S.P.M. O ensino da biblioteconomia no Brasil. Ciência da Informaca-o. 14 (1) Jan-Jun, 1985: pp. 13-15.

2. FONSECA, E.N. da. Desenvolvimeto de biblioteconomia no Brasil. Revista do Livro. 2 (5) Mar, 1957: pp. 95-124.

3. LEMOS, A.A.B. de. Estado atual do ensino da biblioteconomia no Brasil. Revista de Biblioteconomia de Brasília. 1 (1) Jan-Jun, 1973: pp. 51-58.

4. DIAS, A.C. O Ensino da Biblioteconomia no Brasil. 2nd. ed. Rio de Janeiro, IPASE, 1955 (Coll. IPASE, 2).

5. RUSSO, L.G.M. A Biblioteconomia Brasileira: 1915-1965. Rio de Janeiro, Instituto Nacional do Livro, 1966.

6. CONSELHO FEDERAL DE EDUCACAO. Parecer n. 460/82, Homologado em 1. de Septembro de 1982. Diario Oficial da Uniao. 8 Nov 1982. [Full text was reproduced in: Revista de Biblioteconomica de Brasília. 11 (1) Jan-Jun, 1983: pp. 137-148].

7. ROBREDO, J.,C.R. CAVALCANTI, M.B.da CUNHA, V.A.A. MACEDO, S.P.M. MUELLER, and K. TARAPANOFF. Tendencias observadas no mercado de trabalho dos bibliotecarios e técnicos da informacáo, nas bibliotecas especializadas do Distrito Federal. Revista de Biblioteconomia de Brasília. 12 (2) Jul-Dec, 1984: pp. 133-147.

8. BOTELHO, T.M.G. and A.R. e CORTE. O mercado de trabalho do profissional da informacáo na área de biblioteconomia, na Regia-o Centro-Oeste. Revista de Biblioteconomia de Brasília. 15 (2) Jul - Dec, 1987: pp. 249-284.

9. MUELLER, S.P.M., and V.A.A. MACEDO. Proposta de um novo curriculo pleno para o Curso de Biblioteconomia da Universidade de Brasília. Revista de Biblioteconomia de Brasília. 11 (2) Jul-Dec, 1983: pp. 155-176.

10. SAUNDERS, W.L. Guidelines for Curriculum Development in Information Studies. Paris, UNESCO, 1978.

11. SAUNDERS, W.L. Venezuela -- Post-Graduate Training for Information Specialists. Paris, UNESCO, 1984.

12. UNESCO. Curriculum development for graduate education in information studies. Regional Seminar on Curriculum Development in Information Studies; Bangkok; 17-21 Sep 1985. Paris, 1985.

13. SWANK, R.C. Venezuela -- Un Programa Regional de Posgrado de Formación para Especialistas en Biblioteconomía e Información. Paris, UNESCO, 1983.

14. ROBREDO, J. Colombia -- Programa de Posgrado en Bibliotecología y Ciencias de la Información. Paris, UNESCO, 1985.

A HISTORICAL SURVEY OF THE DIFFERENT METHODS OF QUALITATIVE ANALYSIS USED BY THE CEREQ FOR STUDYING JOBS IN INFORMATION AND DATA PROCESSING

Diane BARRAT
Centre d'Etudes et de Recherches sur les Qualifications
9, rue Sextius Michel, 75015, Paris, France

Introduction

By centering our presentation on studies on documentation (information) and data processing performed by the Centre d'Etudes et de Recherches (CEREQ) in the last ten years, we will examine the developments which have characterized the different methods of qualitative analysis of "jobs" linked to these two professional fields. This analysis may reveal changes occurring in the way in which individuals are called upon and solicited in their professional activity.

The Functional Approach

In 1977, a preliminary approach consisted in a study of the "information function" (the concept of 'function' was taken in its broadest sense and not at the level of institutions).

The demand was concerned with training needs, and the aim of the study was essentially qualitative (without claiming to provide a numerical evaluation of jobs and types of training linked to information). The qualitative investigation approach was also voluntarily "prospective" in a certain way: that is, it attempted to show the trends in changing roles, attributions, and profiles of "librarian and research assistants," while nevertheless taking into account the limits of the sample. The analysis dealt primarily with the following points.

1. Identification of the "information function" and of the different information circuits in certain firms or Civil Service departments.

Using a basis a more or less well expressed need for documentation, activities in this field and the production processes set off by the demand were studied (outside the context of departments or units specifically devoted to supplying the answers).

2. Analysis of processes involved in information, and of corresponding job contents, excluding the first and last operations (search for information to process; storage).

The constitution of a certain number of "typical processes" performed in conjunction with professionals in the field of

documentation was accompanied by a study of the factors that could modify certain operations linked to the process. These two procedures enabled the dominant characters of the units observed to be identified. An analysis of the means of division of labor (in terms of information policy, management, and production) enabled the link to be made between information concerning job contents and the nature of individual profiles.

3. Identification of factors concerning the change of the different "components" of the information function.

Taking as a starting point users' needs, and observing that the search for better adequation between demand and the answer provided could only be a dynamic element, it was possible to identify certain signs of change in structures and in individual profiles linked to them.

This method, by identifying the different conditions in which jobs in information and documentation are performed (public and private sectors), and by going outside the restricted observation context of "information departments" (by their analysis of job contents with a documentary dimension, regardless of their functional affiliation and of techniques used) enabled three main types of structure to be identified in documentation (divided into eight sub-groups), and thirty typical individual profiles to be associated with them (out of about a hundred observations).

A document was drawn up from the analysis of these information structures (reference structures, centralized, from firms, decentralized) and of work situations (profiles). For example, if a demand for information and documentation was not fulfilled, the study revealed two types of lack of fulfillment: at the level of techniques designed and used in information departments; and in the training of the research assistants themselves (problem of dual training in information techniques and in a specialized field). Also, the study emphasized the user's lack of familiarity as far as documentation was concerned.

Analysis of Job Contents

The compilation of the French Employment Directory (Répertoire Francais des Emplois [RFE]), begun in the early 1970s, had three main purposes:

1. To provide accurate, complete and accessible information for career guidance, job placement and training;

2. To provide elements enabling the National Institute of Statistical Studies (INSEE) terminology to be updated;

3. To build up a reference system that could be used as a basis for analysis of change, and for research and planning studies.

At this time, labor organization was relatively stable, and the centering method taking this characteristic into account took as its basis:

* a breakdown of the firm
* a breakdown of the production process and of procedures

Once individual activity was identified in this way, jobholders were interviewed mainly about their work and the operational methods corresponding to it. A system of regrouping performed according to a criterion of relative uniformity of job contents resulted in the description of 800 typical jobs. According to Book No. 14 of Jobs in Information and Communication (vol. 3) devoted to information and communication within the firm[1] typical jobs in conservation and documentation are those of museum curator, paleographer, and librarian or research assistant. In Book No. 6,[2] devoted to data processing, 16 typical jobs are described.

The analysis made from the Employment Directory[3] notes that this document is "an accurate, rigorous, and fairly complete snapshot of professional activities" dating from the middle 1970s, and that "the analysis of factors likely to influence job evolution has been facilitated by the procedure set in motion and the information collected by the Employment Directory." It is true that certain elements of change due to the appearance and the use of new technologies are put forward and emphasized in the introduction of the Employment Directory's books:[2]

A resort to data processing modifies the job of librarian/research assistant, which splits into several specialized jobs, according to whether it is concerned with the system of building up, preserving, or communicating information.

The investigation in the context of the Employment Directory proved necessary to enable possible evolutionary pathways to be apprehended (even though changes due to the introduction of new technologies could not be evaluated at their true worth), but it was not sufficient to place professional activity within its environment: this important role is played by firms in their methods of work organization and management of the workforce.

The Effect on Technological Innovation

Through studies performed by CEREQ, concerned with the impact of new technologies on job contents in different professional groups: secretaries[4] and research assistants[5], it appeared "illusory to attempt to isolate the technical factor from

other concomitant change factors (constraints and economic contexts make it necessary to play on product renewal, structural movements, global personnel management policies ...). At the same time, the dynamism of individuals and professional groups has been revealed as an important, even essential factor in a transitional period".[6]

The technical factor is often used as an opportunity or a medium for major changes in the structure or organization of the firm.

Method. In a monograph devoted to the computerization of documentation in two big French firms surveyed in 1984-1985,[6] the preliminary hypothesis was that the use of computerized methods in documentation is responsible for modifying the content of this job, but that this modification takes on meaning and significance only with reference to the overall change in the position of the information department within the firm, to the way in which this department is called upon by the users and evaluated according to its specific performances, and to the characteristics of staff involved in this department and the way in which they appropriate new equipment and procedures within the information chain.

By centering our study on documentation services and by examining the specific way in which they function within the firm, we were able to fulfil the requirement of examining these different aspects at the same time.

The dynamics set in motion via the new relationships established with users will rely on the use of computerized tools which will be designed to link more closely and efficiently requests for documentation within the firm and the answers supplied. This may even involve direct intervention by users in the information process (especially by direct consultation of databases, resulting in a certain redistribution of roles between "users" and the information department within this function.

Results. An "intra-firm" method, contrary to that required in the context of the Employment Directory, did not enable typical jobs to be identified (with a detailed description of activities), but did enable us to reach a better understanding of jobs, and characterize their evolution in terms of organization, modifications taking place in job content, career patterns, and skill development of individuals themselves. Three job levels have emerged (librarian/research or information specialist, assistant librarian, and data acquisition operator), and although this type of breakdown is not new in the professional field of documentation, the introduction of automated information processing techniques implies that the territorial limits between these jobs can be redefined. The qualities developed and the interest that automation may arouse in certain people may favor the broadening of the field of investigation, and the introduction of more varied operations into the information chain.

On the one hand, new requirements encountered at all levels are concerned with an increased rigor in methods of information processing and with studies which optimize job contents. On the other, the rigor implied by the use of data processing may increase expectations with regard to the research assistant, that is, by favoring the specific quality of his or her interventions, thus presupposing sufficient mastery of his or her professional field.

This reinforced professionalism goes hand in hand with an opening onto other area: opening towards users and, more generally, towards the firm in which the department is found, and also opening towards increasingly broader and more varied sources of information and towards the use of new, constantly developing computer techniques.

Professional Dynamics

The dynamic element that may be seen to emerge in a context of technological innovation, through the examination of jobs in documentation, is emphasized still further in the study of computer professionals performed by the CEREQ in conjunction with other French organizations.[7] However, the method used is completely different and is situated at "trans-firm" level. A fairly weighty field investigation in about a hundred firms representative of the participants concerned (constructors, software companies, users, distributors) has given us a better knowledge of this sector and enabled different aspects of computer "professionals" to be studied.

Part of this study is devoted to the analysis of technological innovations and the way in which they influence, and may influence in the future, job contents and computer professions. Another part presents the complex mechanisms of structuring, destabilization, and reorganization of the professional area of data processing. A job terminology and 20 job sheets are presented, since the method used these to draw up various field surveys and compilation of documents bringing together "existing" information on jobs in data processing.

> The presentation of a typology may appear paradoxical if one considers the rapid transformation of job contents, but it mainly refers to a functional analysis of jobs which appears capable of standing up to the test of time.
>
> Indeed, although a certain instability may be observed if an attempt is made to describe each work situation precisely and in detail, the way in which the professional field is divided into main functions, and the existence of data processing professions which are gradually acquiring structure and recognition, introduce permanent elements into the composition of jobs.

> Consistent elements thus emerge from the relationship between functions and professions, and these are as much concerned with training and mobility as with job contents and forms of organization. In particular, it was important to emphasize the confrontation between stabilization and instability in the typology and the job sheets.

Another part of the document is concerned with the analysis of the labor market for data processors, in firms' recruitment policies, and in professional mobility. A statistical study of computer professions was performed, revealing (among other things) the problems of identification and enumeration which exist in a given sector. Two studies have been devoted to the training side, one on the gradual building up of an initial training system specific to data processors, and the other to the implementation and development of continuous training schemes intended for data processing specialists.

The document is completed by a bibliography of these different themes.

The value of this document is that it provides a study of all aspects of the computer professions, using both a qualitative and a quantitative approach, and that it attempts to give a prospective view at the same time identifying potential dynamic elements in the professional area of data processing.

Conclusion

In conclusion, this description of the different methods used to study the "professional area" of information and data processing tends to show that an approach centered only on employment (derived from job analysis) is increasingly insufficient and should be included in a more global and dynamic study of a professional area. However, a broader approach should not dispense with a typological approach to individual activities and jobs.

If, for example, the typical jobs of the Employment Directory are compared to the job sheets of the document on data processing, the latter reflect the "new forms of characterization" and take into account not only the importance of the role played by individuals in the evolution and transformation of the jobs they hold, but also the diversity of the types of organization in which these jobs are found.

Although technological data continue to underlie the analysis, employment is restored to its organizational context. The aim is not so much to apprehend job contents, but rather to bring together elements enabling jobs to be identified and positioned within their professional area.

However, although detailed analysis of job content (as found in the documents of the Employment Directory) has been abandoned, a more dynamic analysis has been introduced:

First, concern with the processes of job evolution and transformation.

Second, concern with the movements of individuals; origin of "data processors" in relation to firms' recruitment policies, but also mobility towards, within, and outside this professional area.

A pluri-dimensional approach (varied sources used, including methods of quantitative analysis, despite the identification problems which may be posed by a statistical study) should enable professional changes to be identified and be able to indicate the main trends in employment changes (without claiming to provide a typical estimate) and their repercussions on training policies (abandoning the idea that a particular reference system for employment corresponds to a particular reference system for training).

REFERENCES

1. ACKER, F., S. BOUSQUET, and N. MANDON. Répertoire Francais des Emplois: Les Emplois -- Types de l'Information et de la Communication, Tome 3 (Information et Communication de l'Entreprise). Paris, la Documentation Française, 1982. 130 p.

2. CAPDUPUY, M. Répertoire Francais des Emplois: Les Emplois -- Type de l'Informatique. Paris, la Documentation Française, 1978.

3. BERTRAND, O. Le Répertoire Français des Emplois (Présentation, Méthodologie, Premier Bilan). Paris, CEREQ, 1985. 16 p.

4. MANDON, N. Technologie et travail: l'Informatisation des activités de bureau. Tome II. In: L'Evolution des Situations de

Travail Individuelles et le Devenir des Groupes Professionnels: Le Cas du Secrétariat. Paris, CEREQ, 1985.

5. BARRAT, D. L'Informatisation de la Fonction Documentaire et l'Evolution des Emplois (le Cas de Deux Grandes Entreprises). Paris, CEREQ, 1985. 55 p. (Document de Travail No. 11)

6. MANDON, N. Bilan d'une Contribution aux Chantiers de l'Association Développement et Emploi au Cours de l'Année 1985-1986: Gestion des Ressources Humaines -- Analyse Qualitative de l'Emploi, Détection des Compétences. Paris, CEREQ, 1986. (Document de Travail No. 21) 48 p.

7. CEREQ (avec la contribution de l'ADI, l'ANPE, le Centre INFFO, et l'ONISEP). Dossier Professionnel: Les Professions de l'Informatique. Vol. 1 (326 p.); Vol. 2 (403 p.) Paris, la Documentation Française, Vol. 1, 1986, Vol. 2, 1987.

MANPOWER SURVEY AND ANALYSIS FOR LIBRARY AND INFORMATION SERVICES IN KENYA

Joseph B.OJIAMBO
Faculty of Information Sciences
Moi University
Eldoret, Kenya

Introduction

The manpower planning process involves a determination of future staffing requirements and action plans to meet those requirements. The process includes three key elements. The Manpower Inventory contains data describing the current workforce in quantitative and qualitative terms. The Manpower Forecast describes staff requirements at specific times in the future. (For example, skills, educational level, experience, and other like requirements are described in either gross number or specific categories.) Forecasting in the mechanistic sense is the prediction of the future based on the observed regularities of the past. It must, therefore, make due allowance for foreseeable changes in technological, social and economic development of a country or for changes in policies within organizations. The Manpower Plan is a specific plan for bridging the gap between the forecast and inventory.

Manpower planning can be conducted in two parts: short term manpower planning and long term manpower planning. Short term manpower planning requires that departments or institutions indicate to their parent organizations, about a year a head of time, the number of staff who will be needed to carry out anticipated duties. Such information may be used by the parent institution to create data showing the number of staff who will be needed by the end of the fiscal year at different levels of entry. For example, library and information services can forecast the staffing requirements by levels, as well as by new positions expected to increase over the coming fiscal year. Such information provides an overview of total anticipated staffing for the coming year and gives an indication of the number and kinds of staff required from an outside library.

Long term manpower planning involves the development of projections of staff needed in the next five or ten years. This is the most difficult aspect of manpower forecasting. The long term future manpower requirements are difficult because most organizations are either unwilling or unable to estimate the future manpower requirements or what type of employment will be needed in the future. A Jordanian businessman is quoted as remarking that "such guessing is an impious act, for only Allah knows what the future may hold."

This paper discusses two projects of manpower survey and analysis for library and information services in Kenya. The first manpower survey and analysis project is conducted entirely by the staff of the faculty of information science at Moi University. The proposed national manpower survey and analysis will be a joint project between Moi University's faculty of information sciences, and the Kenya Government.

Manpower Planning and Its Impact on the Development of Library and Information Services in Kenya

The process of manpower planning in the field of Library and Information Sciences is a recent phenomenon in Kenya. This state of affairs can be accounted for by the fact that manpower planning was not considered to be necessary in the last three decades because the pace of library and information services was slow, and library jobs in particular were less complicated than they are today. Consequently, jobs were adaptable to the incumbents who needed less vigorous training than needed today.

In the late sixties and early seventies most professional library and information positions were held by undergraduate Diploma graduates from U.K. and Makerere University, as the latter was the highest professional qualification available in the East African Region. In most cases, particularly in government libraries, non-professional personnel were responsible for managing library and information services, a practice which exists even today. Furthermore, library and information services have not been seriously considered a priority service by either public or private sectors. For example, the National Development Plan for the period of 1979-83 included manpower projections for different professions and trades for the public service, but the library and information profession was not included in the plan.[1]

During the 1980s, however, we have witnessed a significant change in the attitude of policy makers both in public and private sectors on the role of information in socio-economic development. It is increasingly being realized that utilization of information is the means by which improvements in agricultural production and health standards of the Kenya population can be achieved. Information is also recognized as the means by which the country can raise its industrial and technological levels, and expand and improve the quality of education from pre-primary to University level.

Since Kenya attained independence in 1963, there has been significant development of libraries and information agencies in the country. Despite this development there is still a lack of national coordination and projections of the kinds of libraries and information services needed in the country. There is an urgent need for reorganization of the the library and information

infrastructure to ensure effective access to information, both nationally and internationally. It is true that our library and information services have not yet grown to respond to social, economic, and technological changes which demand increased library services. The main reason for this lack of growth is a shortage of appropriately trained personnel, both in quality and quantity. In particular, there is a shortage of appropriately trained manpower for scientific information services.[2]

In addition to the lack of personnel, administrators of library and information services in Kenya are faced with multiple problems. These problems can be classified as follows:

1. Problems are involved in creating an awareness of the importance of information as an effective resource for social, cultural, and economic development among policy makers. Lack of appreciation and recognition of the importance of information by policy makers can be said to be one of the reasons why the status of personnel working in library/information services is low.

2. Problems are related to the reformation, restructuring, and modernization of existing library and information services to meet the necessary information needs of the Kenyan community.

However, none of the above can be accomplished as long as the country suffers from a shortage of trained personnel in library and information services, and while there is no national plan for manpower for these services. Because of the lack of coordination of library and information services and the lack of preparation for the future manpower needs in Kenya, Moi University in collaboration with various Government Ministries planned to undertake a nationwide manpower survey and analysis in the field of Information Sciences.

Before discussing the manpower planning in Kenya, a brief overview of the state-of-the-art of library and information services in Kenya is necessary in order to understand the scope of the manpower requirement in Kenya.

Library and Information Services in Kenya

Kenya has about 300[3] library and information centers ranging from small libraries in government departments and schools to large libraries like the University of Nairobi (with a collection of over 350,000), and the Kenya National Library Services. These libraries and information centers can be grouped as follows:

a) Academic Libraries of the University of Nairobi Library Systems; Kenyatta University Library; Moi University Library; Egerton University Library; and libraries of teacher training colleges, agricultural training colleges, three Kenya national Polytechnics, and of the Harambee Institutes of Technology

b) National Public Libraries of the Kenya National Library Services Board with 14 branches around the country, and the Nairobi City Library Services with two branches in the city

c) Special libraries and documentation centers in Government Departments, Statutory Boards, Research Institutions, Private Industries, and Business and Legal firms

d) Diplomatic mission libraries such as the United States Information Agency's libraries, the British Council libraries, the Goethe Institute Library, International Organizations like UNEP, ILRAD, ICIPE, ICRAF, IDRC, etc.

e) Elementary and secondary school libraries in a few selected schools

f) The Kenya National Archives

In addition to traditional methods of information storage and retrieval, the use of information technology is rapidly expanding, especially in industry and research institutions. This expansion is going on without specification of overall national development and information needs to be achieved and the manpower planning and forecasting in the broad field of information sciences in Kenya therefore becomes necessary.

An Analysis of Past Library and Information Service Manpower Surveys

The need to plan for library and information personnel has been recognized by Kenya librarians since the early 1970s. Several factors have contributed to interest in manpower planning for library and information services in Kenya.

First, the development of library and information services depends on having the right number of both professionals and para-

professionals of various levels available at the right time.

Second, libraries and information personnel are now working with various information technology, which requires specific skills. For instance, the application of such information technology as computer information systems and audio-visual materials is increasing, and lack of skilled manpower in this area is of concern to planners of library and information systems. Similarly, management of library and information systems has become complex, requiring attitudes and ideas that in most cases were not even thought of twenty years ago.

A third factor relates to the issue of literacy and gradual recognition of the importance of information as a resource for socio-cultural and economic development in its educational system. The expansion of the educational system has created more institutions requiring library and information services, and manpower to run their services.

In addition to educational institutions, there has been a steady development of both national and international research institutions which rely heavily on utilization of scientific and technical information. Similarly, any efforts in transforming Kenya's predominantly agricultural economy into a mixed economy can only be achieved by utilization of relevant information. It is also in this area of agricultural information specialists that the country faces a critical shortage of qualified manpower.

A fourth factor relates to the increasing growth of Kenya's population which is estimated to be 22 million with an annual growth of 4.0 percent. The increase in school enrollment and in information users requires a careful plan for personnel to meet the information needs of Kenya's society. Lack of manpower planning to meet the information needs of increasing population in Kenya may have serious repercussions in the future.

Finally, the need to conduct a comprehensive manpower survey in library and information services was made obvious by the establishment of Moi University in 1984 to offer, among other courses, undergraduate and graduate courses in library service, information science, archives, publishing, printing, and book-selling. Because of the competition for the limited resources available in various sectors of national development, it was necessary for the faculty of Information Sciences, as well as other faculties of the Moi University, to establish the justification of their programs.[4] The faculty of Information Sciences had to establish priorities for areas of library and information services needed in Kenya today, in terms of the nature and range of information handling, skills, and numbers of student intake, qualifications, experience, and skills demanded by employers.[5]

Earlier manpower surveys have revealed the inadequacy of professional and non-professional library personnel. In 1974, the

Kenya Library Association's Manpower Survey of library personnel determined the potential needs for librarians and library assistants for a period of ten years. The report recommended that Kenya needed to train an additional 200 professional librarians and 500 para-professional library staff between 1974 and 1984 at the annual rate of 25 professionals and 50 para-professionals.[6] In the same year, a study by Wachira of the Manpower Planning unit of the Ministry of Education, reviewed the state of the library manpower supply and recommended the training of 250 professional librarians.[7] John Dean's report, also in 1974, basically concerned with manpower requirement in East Africa, estimated that Kenya needed about 100 professional librarians with post-graduate qualifications between 1975 and 1980.[8]

The statistical projections of the 1974 manpower needed in library and information services and those conducted in recent years are fragmented and uncoordinated. For instance, a survey by the Directorate of a Personnel Management Committee, which was given the responsibility of doing a feasibility study for establishing a School of Library and Information Science, projected that 400 additional librarians were needed by the end of 1984.[9] A 1986 study by Nganga of the 40 major libraries, reported that Kenya needs urgently to train 800 library and information professionals both at professional and para-professional levels.[10]

The major weaknesses of these manpower planning surveys relate to the scope of coverage and methodology applied in collecting data. For example, past surveys did not take into account manpower requirements in other information sciences specializations, such as archivists, information scientists, publishers, and those in book trade industry. They also did not take into consideration the new institutions like additional universities, and international organizations, schools, and colleges. These surveys were concerned only with quantitative data and not qualitative aspects of manpower requirements. As a consequence, they failed to provide valuable information that could be used in projecting the present and future needs of Kenya's manpower in a wide spectrum of information sciences. As a consequence, there was a need for a different approach.

The Current National Manpower Survey and Analysis

The current National Manpower Planning Project was initiated by Moi University in collaboration with the Kenya Government Ministries, Departments, Parastatical Organizations, and the Kenya Library Association. The survey is designed to cover those services whose functions are to provide information, raw or processed. These include libraries, information and documentation centers, publishing and printing processes, computerized information systems in public services, and commercial and industrial business enterprises. The survey is intended to enable Moi University, the Government Ministries, Departments, Companies and library and

training institutions to achieve the following goals:

1. At the national level; to establish the overall quantitative and qualitative levels of manpower needs including the types of education and qualifications needed in the country, and assess national information requirements in relation to development policies at district level.

2. At the corporation or institutional level; to ensure that the right people with the right skills are employed.

3. At Moi University:

a) to enable the Faculty of Information Sciences to match student intake and output with the projected manpower demands and growth of services

b) to enable the faculty to assess the levels of required personnel and skills in the job market at national levels, making it possible for the faculty to match its curricula content to the required professional competencies

c) to enable the faculty to play a leading role in creating national awareness of the value and importance of information as a resource for national development

It was the belief of the planning committee that manpower planning for library and information professionals should be fully integrated with national manpower planning, otherwise manpower planning becomes a fruitless exercise with little or no impact on the ultimate direction in which it is intended.

However, for practical purposes and also because of lack of funds to conduct a nationwide manpower survey in the field of library and information sciences, the survey is being conducted in two stages. Stage One of the Manpower Survey collected qualitative and quantitative data to enable the Faculty of Information Science to identify the type, nature, and range of information skills needed in Kenya today and in the future. The survey is intended to:

1) identify and locate types of employers who require personnel with information handling skills;
2) examine the qualifications, experience, and

skills needed by employers;
3) analyze the type, nature, characteristics and range of skills that are required by employers;
4) match the curricula content to the required professional competencies.[11]

The results of this survey will be supplementary to the National Manpower Survey and Analysis. The methodology used in this survey, one developed by NicK Moore,[12] involved scanning Kenya's major daily newspaper for advertisements in information related jobs for the last 24 months. This was followed by a summary of numbers of jobs advertised and a breakdown into time-scale of vacancies. This information is being analyzed by type or job, and by employer. A matrix of type of job and type of employer linked to information-handling activities has been prepared to facilitate the analysis of each group of jobs according to the qualifications, skills, and experiences required by employers.

An analysis of the categories of jobs advertised in the area of Information Sciences from May, 1986 -- May, 1988, reveals that out of 173 jobs advertised during this period 58 were library jobs while the remaining 115 belonged to other information sciences related areas (see Table 1).

Table 1: Number of Jobs in Each Type of Work, May, 1986 -- May, 1988

Type of Work	Number of Jobs
Library Work	58
Information Officers Work	11
Research and Information Analysis	21
Information Systems Analysis	17
Editorial and Publishing Work	27
Archives and Records Management	9
Documentation Work	11
Printing Managers Work	10
Public Relations plus Communications	7
Book Trade	2
Total	173

A stratified random sample of 60 organizations from the advertised jobs and post holders was drawn up and used for in-depth interviews with both employers and post holders. Similarly, further interviews were carried out with types of employers offering information-related jobs whose advertisements were not available during the scanning period.

Full results for this study are expected to provide qualitative information regarding (a) expectations of employers with regard to qualifications, skills, and experiences; (b)

characteristics of post holders; such as, how many with qualifications, relevance of qualification to jobs; and (c) present and future needs of employers. This survey has been funded by IDRC.

Stage Two of the survey, which is a national manpower survey, is designed to investigate qualitative and quantitative aspects of library and information professionals. Two questionnaire instruments have been designed to collect data. One is for employees, the other, for employers. The employee questionnaire is designed mainly to collect qualitative data such as job title, current skills, qualifications of the participants, and their training needs. The employer or organizational questionnaire is designed to collect specific kinds of data such as the name of the organization and its location. Also, general information such as the date when the organization was established, type of organization, its main objectives, sources of funding, and current total number of staff by gender will also be collected. Data regarding information services maintained by the organization (library, documentation center, registry files, archival center, computer information systems, printing and publicity services); including the date when these services were established, where they are located in the organization, average number of people using these services, size, and collection, will be requested as well.

Part Four of the questionnaire is concerned with various kinds of information technology/equipment used by each participating organization in processing, storing, and disseminating information, and the location of equipment in the organization. Part Five of the questionnaire concerns the numbers by level of personnel working in the library and information service in an organization. The two surveys, conducted in two stages, will further the endeavor to establish the number of institutions which need to have libraries and information sources or systems.

Summary

The two manpower planning surveys described in this paper are certainly not panacea for solving library and information services staffing and educational problems. It is hoped that the outcome of the two surveys will encourage the library and information service administrators, library and information training institutions, and policy makers to think strategically about manpower resources needed in Kenya. It is also hoped that by using specific procedures to estimate the supply and demand of library and information personnel, and skills needed to manage information service, those factors which influence the ability of various organizations to balance supply and demand of library and information personnel will become more visible and explicit.

REFERENCES

1. KENYA, REPUBLIC of. Development Plan 1979-1983: Part 1. Nairobi, Government Printer, 1979. 482 p.

2. NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY. Report No. 4. Of: 1980 On Science and Technology for Development. 1980.

3. Subject Guide to Information Sources in Kenya. Nairobi, Kenya Library Association and National Council for Science and Technology, 1980.

4. Education Plan of Moi University Kenya: Interim Draft Report. New Delhi, Educational Consultants India Ltd., 1985.

5. ROSENBERG, Diana. Proposal for a Survey of the Skills and Training Needs of Information Professionals in Kenya. April, 1988. (mimeo) 6 p.

6. Kenya Library Association. Report of the education sub-committee. Maktaba. 2 (2) 1975: pp. 114-121.

7. WACHIRA, S.M. Library Education and Supply of Sub Professional Librarians in Kenya. Nairobi, Ministry of Education, November, 1974.

8. DEAN, John. A Regional Library Programme for Eastern Africa: A Report Prepared for the Standing Conference of African University Libraries (Eastern Africa). 1974.

9. A Project Proposal on the Establishment of School of Library, Archives, and Information Studies in Kenya. December, 1981. (mimeo)

10. NGANGA, J.M. Library and Information Manpower Analysis and Training Needs. 1985. (mimeo)

11. ROSENBERG. Op. Cit., p. 6.

12. MOORE, Nick. Guidelines for Conducting Information Manpower Surveys. Paris, UNESCO, 1986.

SESSION VII

IMPLICATIONS FOR EDUCATION AND TRAINING

27 August 1988

Chair: Marjatta OKKO (Finland)

MALAYSIAN MANPOWER SURVEY OF LIBRARIES, INFORMATION SERVICES, AND ARCHIVES: 1986

Molina S. NIJHAR and Norma Abu SEMAN
School of Library and Information Science
Mara Institute of Technology (ITM)
Petaling Jaya
Selangor, Malaysia

INTRODUCTION

A Brief Background of the Country

Malaysia is a multi-racial nation practicing parliamentary democracy. A Southeast Asian country of about 130,000 square miles, Malaysia shares a border with Thailand in the north and is separated by the Straits of Malacca from Indonesia which lies southwest of Malaysia's east. Singapore lies at Peninsular Malaysia's southern tip.

The country is composed of 13 states, 11 in peninsular West Malaysia. The East Malaysian states of Sabah and Sarawak are on Borneo Island, lying to the west. The population is estimated to be 18.5 million[1] comprised mainly of Malays and other indigenous peoples (Kadazans, Bajaus, Muruts, Dayaks, and Ibans), Chinese, and Indians. It has a relatively young population, with 59.2% below 24 years of age, thus creating great demand for schools and tertiary institutions. Six years of primary and five years of secondary schooling is free (no fees), culminating with the Government's Malaysian School Certificate. There is a further two year Higher School Certificate course for those who make the grade. Entry into the seven universities is very competitive as only about 1.1% are admitted each year. Malay is the medium of instruction from primary to university level, being the official language. But English is given emphasis throughout school and tertiary education. Chinese and Indian languages are taught and used in vernacular primary schools, but Malay (Bahasa Malaysia) is compulsory.

Background of the Project

As the School of Library and Information Science at the MARA Institute of Technology (ITM) is at present the only library school in Malaysia and has been so since 1969, the role of manpower planning for this sector has always been taken most seriously. Since the early seventies the School has monitored the type and number of professionals that will be needed to man the growing numbers of national, public, special, and university libraries in the country. A close scrutiny was kept as to the numbers needed, through direct contact with potential employers, ad hoc and random surveys, as well as through estimates gleaned from previous five

year Malaysia Plans and from other socio-economic manpower planning agencies. The School's policy is also to review its curriculum about once every 3 years for updating, to keep abreast of both professional and institutional changes. ITM undertakes a major structural review about once every 5 years (or whenever deemed necessary) to keep pace with rapidly changing knowledge and technology in the field of library and information science.

Against this background, the school decided that a comprehensive survey of manpower needs, both qualitative and quantitative, was timely for the library and information sector. This plan was given greater impetus when UNESCO agreed to support such a survey through its funding and advice. At UNESCO'S request the archive sector was included in the survey.

Significant to this project is the second Survey of Library and Information Manpower Needs in the Caribbean[2] which provided a relevant and tested manpower planning model for this project. (Section II provides the gist of other manpower planning activities and trends in Britain and the U.S. as well.[3]) As this model was based on a 1982 pilot study[4] of that region, subsequent modifications were used to refine the model used in the Caribbean study. The experiences recorded in that second survey provided a sound basis for any such exercises by another developing country like Malaysia. Our search through the existing literature on this subject also pointed to this model as being the most viable.

On an administrative level, correspondence was already initiated to UNESCO regarding its involvement with the School in conducting a national level manpower survey. The fact that UNESCO had commissioned Nick MOORE to publish a manual, Guidelines for Conducting Information Manpower Surveys, based to a large extent on the Caribbean experiences, reinforced the decision to base Malaysia's manpower survey on a similar model.

The Survey

This survey was conducted by two lecturers of the School of Library and Information Science at MARA Institute of Technology (ITM). It was undertaken as a joint research project between ITM and UNESCO. UNESCO's contribution is in terms of funding. A consultant in manpower planning was identified by UNESCO, to give guidance on the survey model commissioned by UNESCO, entitled Guidelines for Conducting Information Manpower Surveys, 1986.

The whole project began in March 1986 and completed in December 1986. Submission of the final draft report to UNESCO was made in early March 1987, and final report was completed in June 1987. The instrument used to collect information for the survey was largely questionnaire. The questionnaire used in this survey was a modified version of UNESCO's questionnaire designed for manpower survey by Nick MOORE in the above mentioned Guidelines ...

The Scope of the Survey

This survey is a comprehensive national survey of the manpower situation in the library, information, and archive sectors in Malaysia. All types of libraries, information units, and archives known to exist in Malaysia were included in this survey. A total of 273 such organizations were identified and 260 were selected as respondents. Among them were 21 public libraries, 12 school libraries, 175 special libraries and information units, 41 college libraries and academic libraries, and 3 archives. A list of libraries, information units, and archives centers and branches were identified using the Directories of Libraries in Malaysia (2nd ed., 1982) as the basis. A great deal of changes and current information had to be incorporated and updated, to the existing list to make it more comprehensive and up-to-date. Several college libraries attached to private tutorial colleges were identified and included in the list. In addition, help from the Sabah State Library and Teacher Training Division of the Ministry of Education was sought to get an updated list of libraries in Sabah and of libraries in the teacher training colleges throughout the country. School libraries under the Ministry of Education's jurisdiction were excluded because there are no posts for librarians and therefore represent a nil job market. Only the libraries of schools known as MARA Junior Science Colleges (MSRM) that employ librarians, have been included in this survey.

A total number of 260 questionnaires were distributed to the various types of libraries, information centers, and archives throughout Malaysia. The 72% response rate from the participating sectors in this survey was very good and we are grateful to all those who took the trouble to provide the information. The total number of questionnaires completed and returned was 161. In addition, a further 26 forms were returned by organizations which indicated that they did not employ any library, information, or archives staff. These forms were counted as "the nil response." The remaining 73 libraries made no response at all.

The survey achieved a 100% response rate from the national and public libraries. As for the academic libraries, the response rate was 87.5% where 7 out of 8 university libraries were able to complete and return the questionnaires. We regret that one established university library did not return the questionnaire despite our reminders and extension of deadlines. For the other types of libraries, the response rate was most satisfactory, with a 70% response rate for college libraries, 73% for school libraries, and 67% for special libraries. Three out of four archives responded to the survey.

RESULTS OF THE SURVEY

This part summarizes all the findings of the survey, highlights the main or significant findings and gives an overall picture of

library, information, and archives manpower situation in Malaysia existing at the time of the survey.

Particular attention is given to size and demographic characteristics of the workforce, the current employment situation growth in demand of the workforce, employment opportunities, recruitment, training needs, new programs and levels of training, and other matters pertaining to manpower planning. All these factors served as useful indicators in the planning of library, information, and archives education and training for the future.

The Size of the Workforce

The total workforce for the library, information, and archive sectors is estimated to be over 2000 persons. This survey also indicates that a fairly high proportion of the workforce, about one-third, are professionally qualified. Further, in the professional category for libraries and information units, slightly more than half are graduate professionals. In the archive sectors, all but one are graduate professionals.

With regards to the employment distribution of professionals, it is apparent from the survey that graduate professionals are employed mostly in academic and college libraries, whereas the non-graduate professionals are employed in special and public libraries. The survey identifies the major employers of professional staff currently. The academic library sector forms the largest employer, employing about 40% of the qualified professionals. Next largest is the special library sector which employs about 30% of qualified professionals. The national and public library sectors employ about 10%.

This survey is able to estimate the average number of staff employed in each type of library. The average number of professional staff by types of libraries are 60 for a national library, 30 for an academic, 3 for a public, and 1 each for special, college, and school libraries. The survey identified about ten major library organizations consisting of the academic libraries and the national library that employ about half of the total workforce surveyed.

The archives manpower situation is distinctly different from the library sector. Most of the staff in the archive sectors are employed by the National Archives. The distribution of the manpower is within the National Archives organization and its three branches. The distinction between graduate and non-graduate professionals is not apparent because the archive sectors employ mostly graduate professionals.

For the future, the Ministry of Education should give serious thought to improving the staffing position in college and school libraries. Many useful recommendations have been made in

the blueprint, but implementation of these in stages require the concerned efforts of the professional association (P.P.M.) and the Ministry's planners.

Demographic Characteristics of the Professional Workforce

Two significant demographic characteristics highlighted by this survey of the professional workforce are the male-female ratio and the age structure.

The survey showed an imbalance in the proportion of male and female professionals, with more women than men for both the library and archive sectors (that is 64% women and 36% men). This situation is similar to those experienced in other developed and developing countries such as United Kingdom, Australia, or Singapore. Librarianship as a profession in Malaysia is still dominated by women (female dominant) because over the years the profession attracted more women than men. This is quite a universal characteristic of the profession. As for the archive sectors, the difference in male-female balance is less marked (that is 54% women and 46% men), but still there are more women than men. The likely effect of more women in the library profession is less mobility and this may partly explain the reason for low mobility and turnover rates.

The data collected on age reflects a unique and distinct age profile of professionals (see Diagram 1). The professional workforce in Malaysia is relatively young, that is 80% are between the ages of 25 and 40. Newly qualified professionals start their career early at the age of 23 or 24, soon after the completion of their studies. The profession as a whole is a relatively new profession in the country. In the 1950s and 1960s new entrants into the profession were few. But about the mid-seventies, there was an unprecedented bulge in the age structure of professionals. Very few professionals are in the age group of "over 40" or nearing the retiring age. They are mostly men. When comparing the age structure of the male and female professionals, it appears that there are more females than males between the ages 25 and 40.

In view of the imbalance in the male-female ratio, it is recommended that this situation be rectified at the initial entry point to the profession, that is the library school should aim for a more balanced intake without compromising on the quality of new recruits.

Vacancies

The survey shows that the number of posts (as of 31 December 1985) held vacant is high. The overall vacancy rate of 12% gives an indication that there is a shortage of staff in existing libraries. The vacancies are caused by the difficulties libraries experience trying to fill posts. Slow recruitment procedures and two years

of economic recession have also contributed to a high vacancy rate. It is feared that these vacant posts may not be filled for a long while yet.

Answers to the Supplementary Questions indicate that shortage of staff is a problem experienced by most libraries. The part of the library sector facing high vacancy rates is composed of public, national, college, and school libraries. Academic libraries do not face serious shortage problems. The archive sector also experiences a low vacancy rate.

For vacant professional posts, there exist more vacant posts for graduates than for non-graduates. This reflects a general shortage of graduate librarians. For non-graduates, high vacancy rates are observed in school and college libraries. Probably these high vacancy rates can be partly attributed to lower salary scales for professionals in school libraries. The present scale (B11) is not attractive and does not help in retaining the professionals even though they are interested in joining the service. As for the semi-professional staff the vacancy rate is high with one in ten para-professional posts being vacant. Similarly about one in twelve clerical posts were vacant. Obviously, this situation indicates a shortage of support staff. The general shortage of professional and support staff in the long run would affect the standard of library and information services.

Library administrators view staff shortages as a serious setback to providing effective library services, particularly in the public, school, and college library sectors. In view of this, they should lobby more effectively with the Public Services Department and State Governments to fill existing vacant posts (as indicated by December 1985). They should also expedite recruitment procedures so that posts already approved should not remain vacant for long periods. Many posts have since (in 1986) become frozen and this is an administrative weakness on the part of librarians themselves. It is suggested that a more in-depth study be conducted for the affected sectors, to determine the optimum deployment of professionals and support staff, for the remaining of the Fifth Malaysia Plan. During this period, staffing is expected to remain a critically serious issue.

School libraries (MRSM) that employ full-time professionals should consider upgrading salary scales commensurate with a person's professional qualification given to librarians in the federal public sector, that is, the same as in the Common User Scheme.

Another alternative is retraining and re-deployment of serving officers for college and school libraries. From the pool of serving graduate teachers, the Ministry should send about 15 a year to do the Post-graduate Diploma in Library Science Course at ITM. On completion, these officers could be posted to college

libraries. For schools, the Ministry could appoint one school librarian to serve two or three major schools within an area. This is similar to the Ministry of Education's plan for music teachers. Since no school librarians' posts exist, the Ministry could convert existing education officers' posts to that of school librarians' posts -- one officer serving 2/3 of the schools.

Movement Within the Workforce

The survey has revealed that there is little movement or mobility among the professionals within the workforce in terms of people retiring, changing jobs -- either from within or from outside the profession, or re-entering the service.

The staff turnover rates appear to be very low. In 1985 the turnover rate was 5% which means that one in twenty professionals left their job to work elsewhere. Even though generally there is little movement within the workforce, a few employers have experienced a high turnover of staff in recent years as indicated in the Supplementary Questions. However, this is not a common trend, except in some public libraries.

The number of professionals who retired is nil. This may be explained by the fact that the workforce is still young. A very small number leave the profession to join other establishments. Therefore, wastage is very small.

It can be concluded that the workforce is very stagnant. The implication this may have on career development is that the lack of movement will restrict promotions, exchange of ideas, and experiences between libraries. To offset these, the library school or the professional association could stage many more panel discussions, workshops, short courses, etc. to stimulate exchange of views and greater interaction amongst librarians.

Staff Receiving Training

Professional and non-professional staff in library and archive sectors were given the opportunity to attend formal and full-time courses both locally and overseas, through their staff training programs. The ratio between graduates and non-graduate professionals undergoing in-service training is almost equal. At the time of the survey 27 professionals were on such full-time training programs, 21 overseas, and 6 in Malaysia. This is a significant number. It is known that each year the Public Services Department provides scholarships for post-graduates studies overseas in library, information, and archive sectors, besides institutional sponsorships for staff.

Recommendation. In the context of the findings of this survey, there is a clear indication and justification for the establishment of a Master's level program locally. Since the

Library School in ITM is the only training institution in the country that has been involved in the training and the education of librarians for the past 20 odd years, it is a logical choice for conducting Master's level courses. With about 25 persons this year currently studying overseas in the U.S. and U.K. for a Master's degree, there is an urgent need to rationalize resources in Malaysia, to undertake this responsibility and thus save a great deal of money on foreign exchange. A Malaysian based Master's program will also enable many more working professionals to return to the library school to update their knowledge and equip themselves with the latest technological developments in their field. An added advantage with such a program is that their studies and research would be geared to local problem-solving, which should contribute to the development and growth in knowledge of Malaysian librarianship.

Since the survey indicates that the actual number of support staff, fourteen, undergoing in-service training is small and entirely locally based, it is logical to conclude that existing training programs should continue. The nature of training programs for support staff will be reviewed at a later stage.

Growth Rates and Demand for Posts

The growth and demand for posts during the short and medium term periods was based on data collected for existing and new posts in the establishments as of December, 1985.

There was a healthy growth rate of 4.9% for the short-term (1985), and an anticipated growth rate of 6.8% for the medium term (1986-1990). These are encouraging and positive features, despite job freezes and cutbacks in the number of new posts. In the next five years it is anticipated that the growth of new posts will be much higher.

Potential growth areas for professional posts is much stronger than the non-graduate posts. Growth rates for graduate professionals is 11% as compared to 1% to 2% for non-graduate posts. This is due to the fact that main growth areas are with academic libraries which prefer graduate professionals. For the non-graduates, the potential growth is found in special and public libraries.

In general, the demand pattern for the future is not only moderate, but emphasizes the fact that there will be a greater demand for graduate professionals in the job market than for non-graduates.

Recommendations. The Library School at ITM should train more graduate professionals than the present level of output. As there is already a post-graduate professional course on-going, the

increase in output can be done almost immediately. Concurrently, there should be no increase in the output of non-graduates, preferably retaining the current level of output of 40 to 50 professionals a year.

As the potential growth area is mainly with academic libraries in the medium term period, the future of non-graduate professionals in that sector is nil. To give them the option of working in academic libraries, it is imperative for the Library School to establish a Master's level program that will enable them to upgrade their qualifications with minimal dislocation and to ensure wider job opportunities for a group of experience non-graduate librarians.

Future Recruitment and Training Needs

The number of professionals trained for short and medium term period was determined by using the model in the Guidelines ... (Appendix II), plus figures from the employers' projections and estimates, movement numbers, and vacant posts.

Short-Term (1986). For the short-term period the recruitment and training needs of professionals indicate a positive and encouraging trend. For both libraries and archive sectors there is a need to train 74 persons more than the current supply figures to meet the demand for 1986. However, this figure may not be that representative of the actual demand for 1986 because the economic situation affecting the country has now caused many more of these posts to be frozen.

For the library sector alone there is a need to train 81 professionals; out of this group, 70 are graduate professionals. This shows a greater need for graduates than for non-graduates. Even though this is quite a high figure, it is quite an acceptable and reasonable figure because of the high vacancy level and the recent policy changes in university libraries (January, 1986) to upgrade and redesignate professional posts from A22 (non-graduate posts) to A19 (graduate post). This means that the entry into university libraries will be at the graduate professional level henceforth. Increasing the intake of graduate professionals to about 20 per year is recommended.

The demand for non-graduates is small -- about 11 posts more than the current supply figures. The non-graduate posts are reduced or depleted considerably, especially so in the academic libraries which show a negative figure (of -31). Maintaining current intake for this category is recommended.

The need for non-professional staff for the short-term period is also significant. There is a need to recruit 57 para-professionals and 88 clerical staff.

There is a need to increase the output of para-professional staff and to consider their training needs. It is recommended that more in-service courses of existing non-library staff be stepped up so that there is better deployment of staff to meet the demand for para-professional and clerical staff within the library and information units of each organization.

The archive sectors show a negative recruitment need for professional staff. This may be explained by the fact that in 1985 about 13 professionals were recruited and they must have filled up the vacancies for 1986.

Medium Term (1986-1990). The recruitment and training needs for the next five years show a positive trend. The number of persons in the professional and semi-professional categories that need to be trained was indicated in the survey.

Within the professional category, there is a need to train about 147 more graduate professionals than the current yearly output from training institutions. This means that the recruitment and training needs per year is about 30 persons over and above the current output. For the non-graduate professionals there is a need to train about 10 persons or an average of 2 persons per year, in addition to the current number of output.

For the training of the professional staff it can be concluded that the output for graduate professionals should double the number of the current yearly output and should be around 30 persons per year. Whereas the output for the non-graduates should not be increased; instead the training institution should sustain the present level of output so as not to oversupply. Better employment opportunities will thereby be ensured.

The need for the non-professional category for the next five years is quite significant in number. For both sectors there is a need of 200 more semi-professional staff and 239 more clerical staff on top of the current supply levels. Libraries which will be needing more non-professional staff are public, national, and academic libraries. Special library sectors indicate a very serious need for support staff. The archive sectors will be needing about 15 clerical staff in the next five years.

Recommendations. To fulfill the short and long term manpower needs, it is recommended that ITM's Library School recruit more students into the post-graduate program in the immediate future to meet the demand of the future job market. Effort should be made to encourage the Ministry of Education to send serving library teachers to pursue the Post-graduate Diploma course.

It will also be prudent for the Library School to come to a formal arrangement with the Ministry of Education to intake about 20 experienced teacher librarians (with a minimum H.S.C.

qualification), into the second year of the Diploma Course. This will ensure them a professional library qualification that will provide the Ministry a pool of dual qualification personnel -- ideally suited to upgrade the emerging school library resource centers and set our education system towards achieving quality education.

In terms of training of non-professional staff it is suggested that the National Library of Malaysia, the Library Association of Malaysia, and the Library School of ITM continue to organize short courses and similar in-service training programs of formal and informal nature to train support staff.

Education and Training Needs for the Future

The implication of the survey findings on education and training of professionals in the library, information, and archive sectors is quite significant and demand immediate attention and planning in line with future trends. The newly emerging information job market for professionals, the constantly changing library, information, and archives environment and the move towards an information society, are new trends which influence and affect the education and training programs for the future. It is apparent that the Library School of ITM should provide a more diversified and specialized training at the undergraduate and post-graduate levels, in order to meet the diversified needs of the changing job market.

Diversification. The emerging information science area and the demand for information personnel to man libraries and information centers was confirmed in the survey findings. The future will need more of information personnel than present times. The existing programs of library and information science education in ITM Library School have to be diversified to provide education and training in more than one area, such as library science, information science, and records management. More diversified programs will enable the output of various types of information manpower; that is, librarians, information officers, publication and documentation officers, research assistants, record managers, and others.

New Programs. In line with the diversification program to allow new areas of specialization, the ITM Library School should introduce new programs to train the various types of information personnel needed by the job market of the future. Based on the views of employers regarding the need for new categories of information personnel in the next five years, the survey findings show a positive need for information personnel, particularly information scientists and officers who will be in great demand in the future. The nature and scope of new programs that is anticipated to be introduced should be in the areas of:

a) Information
b) Documentation, Publication, and Research
c) Archives and Records Management

Need for Masters Level Program. Another strong implication this survey has on the education and training program for the future, is a felt need to establish a master level program in library and information science in Malaysia. The survey managed to assess the levels of training program needed beyond the Diploma or Post-graduate Diploma levels. It was clearly indicated from the responses that the master's level is the most preferred level. The survey is also able to gather strong justifications for the establishment of a master program locally. First, the employers have indicated that there is a provision in their organizations for their professionals to achieve a Master's degree in the long run. Second, the number of professionals currently doing their Master's degree overseas is quite significant, and this is a viable figure to start a course locally. Third, the master's program is also a means of enhancing career development for all professionals. With a master qualification, a non-graduate professional will have a better opportunity to move up a career ladder, to the top or middle management level, besides wider employment opportunities in academic libraries. It will help to trigger wider job mobility and overcome the present stagnant situation.

It is timely now for the ITM Library School to establish a master's program in library and information science which should be an advanced level program geared toward research and local problem-solving. Finally, as has been stressed earlier that ITM Library School should be a logical place to run the master's program since the library school has been the pioneer in the education and training of librarians in Malaysia for the past 20 years. The fact that a master's level program is to be of an advanced level, to the existing program, it is felt that the ITM Library School has an important role and contribution to make in coordinating the various types of education and training programs in librarianship in Malaysia.

Continuing Education. With regards to continuing education and in-service training programs the survey has not only confirmed this need but also identified areas and the nature of in-service training programs required for library, information, and archives professional and non-professional staff.

For the professional category, the majority of the respondents have indicated that management, current professional development, information handling, automation, and audio-visual librarianship are the main subject areas or topics of interest. For the para-professional categories, regular short courses are required from time to time in area that emphasize: general understanding of library work, understanding of routine tasks and

procedures, handling of equipment, public relations, motivation, and quality of work.

Future Job Market. The future job market is envisaged as one which is very competitive, requiring personnel with information handling skills and knowledge in handling and using new technology to store, access, and retrieve information and data. The job market of the future will need more new information personnel than the traditional libraries. Therefore, the output from education and training institutions should be well prepared and equipped with the right knowledge and skills to meet the future requirements and new challenges.

Computerization (Automation). The survey also gathered information regarding major or significant changes expected to take place in libraries, information units, and archives within the next five years. Most of the libraries and information units predicted that computerization of the library systems, either wholly or partially, would be the main development taking place. Other changes, such as increasing use of audio-visual (AV) materials, increasing emphasis on information work, online information services, development of special collections and general expansion of facilities and services, were also considered highly likely.

Computerization will be one major development and this is already underway. It is important for training institutions to take note of this because, with computerization, changes in the staffing situations and the types of personnel is anticipated to change at a rapid rate. Therefore, future information professionals or output from training institutions should be well trained and qualified in areas such as: computer knowledge, computer applications in library situations, systems design and analysis, information management, and data processing.

Emphasis in the Education and Training Programs for Professionals. The employment pattern and distribution of professionals, as reflected by the survey, shows that graduates generally find employment in academic and college libraries while the non-graduates generally find employment in public, special, national, and school libraries. In view of this it is logical and realistic for the ITM Library School to emphasize in its post-graduate diploma program, an in-depth study of academic library structure and administration. Similarly, for the diploma (undergraduate) program, emphasis should be towards public, special, national, and school libraries. The study of roles, functions, and management of these types of libraries should be reinforced in the curriculum.

REFERENCES

1. Fifth Malaysian Plan 1986 -- 1990. Kuala Lumpur, National Printing Department, 1986.

2. Prepared by Gloria GREENE and Reive ROBB for the General Information Programme and UNISIST, Paris. Paris, UNESCO, 1985. (Document PG 1-85/WS/12).

3. Ibid., p.8.

4. Ibid., p.1.

BIBLIOGRAPHY

Bank Negara Malaysia: Annual Report 1985. Petaling Jaya, 1985.

BRITTAIN, Michael. The Emerging Market for Information Scientists: Implication for Education and Training. Presented at: Singapore-Malaysia Congress of Librarians and Information Scientists, Singapore, 4-6 Sept., 1986.

CHAN Thyje Seng and FOO Kok Seng. Library Manpower Planning and Development in Singapore: With Special Reference to Computer Application in Library and Information Services. Presented at: Information Infrastructure for the 80's. LAS-PPM Joint Seminar. Singapore, 7-9 Dec., 1978.

COMROY, Barbara. Library Staff Development and Continuing Education: Principles and Practices. Littleton, Colorado, Libraries Unlimited, Inc., 1978.

ECONOMIC PLANNING UNIT. Fifth Malaysia Plan 1986-1990. Kuala Lumpur, National Printing Department, 1986.

FUSSLER, Herman H., J.E. JEUCK, and D.R. SWANSON (eds.). Management Education: Implications for Libraries and Library Schools. Published for the Thirty-sixth Annual Conference of the Graduate Library School of Chicago, The University of Chicago Press, 1973.

KEMENTERIAN KEWANGAN MALAYSIA. Anggaran Belanjawan: Program

dan Prestasi 1986. Kuala Lumpur, Jabatan Percetakan Negara, 1985.

KHOO Siew Mun, and TAN Bock Thiam. Manpower Planning and Development in Malaysia. Presented at: Information Infrastructure for the 80's. LAS-PPM Joint Seminar. Singapore, 7-9 Dec., 1978.

MINISTRY OF FINANCE MALAYSIA. Economic Report 1986/87. Kuala Lumpur, National Printing Department, 1986.

MOORE, Nick. Guidelines for Conducting Information Manpower Surveys. The Manual: Vol. I. Questionnaires and Accompanying Documents: Vol. II. Paris, UNESCO, 1986.

PANDUAN PERPUSTAKAAN DI MALAYSIA = Directory of Libraries in Malaysia. 2nd ed. Kuala Lumpur, Perpustakaan Negara Malaysia, 1982.

PANDUAN PUSTAKAWAN MALAYSIA = Directory of Malaysian Librarians. 3rd ed. Kuala Lumpur, Perpustakaan Negara Malaysia, 1986.

STONE, Elizabeth W. (ed.). New Directions in Staff Development: Moving from Ideas to Action. Chicago, American Library Association, 1971.

TELL, Björn. Pilot Projects on the Development of a Library Network (Malaysia). Paris, UNESCO, 1976.

WARD, Patricia Layzell. A Survey of Manpower Needs for Library and Information Service in Singapore: 1985-1995. Singapore, April, 1984. (Unpublished report).

ZAITON Osmon and ZAWIYAH Baba. Manpower Planning and Professional Performance. Presented at: Seminar Mengenai Dasar Kebangsaan Bagi Perpustakaan dan Perkhidmatan Maklumat. Petaling Jaya, 29-31 October, 1984.

MANPOWER AND TRAINING NEEDS IN ARCHIVES AND RECORDS MANAGEMENT

Michael COOK
University of Liverpool
Chairman, International Council on Archives,
Committee on Professional Education and Training
Liverpool, United Kingdom

Introduction: Background

Although usually accorded low priority in practice, the recognition that the proper management of records and archives forms a necessary part of a national information service is now general. Records are documents (in whatever media) generated and kept as part of an administrative transaction -- either in government, in business, or in private affairs; archives are those records which have been selected for long-term preservation and for exploitation because of their potential value in research. The whole body of archives and records constitutes one-half of the documentation required by an information service: that half of the documentation which is generated from within the system, in distinction from the other half, which is brought in from the outside. Several studies over the last decade have established these points, and the theory has been backed by practical projects in several instances.

As a generalization, the setting up and operation of records management and archive services trails behind the recognition of their place in overall policy. In some northern countries the heritage aspect of archive administration still remains dominant (it is not suggested that there is anything unsuitable in this, at least in the case of countries where cultural assets are considerable), and records management suffers in comparison. In many southern countries it is about equally difficult to staff and run both aspects of the service. Training and recruitment are a constant problem, and one which is traditionally relegated to the end of the planning and resource supplying process. There are many examples of countries where a good beginning was made, which has not been sustained over time because of the absence of an effective recruitment and training provision. Training, of course, is the key to successful development.

Current State of Training Provision

There is no satisfactory survey or directory of training programs in archives and records management. The current International Federation of Library Associations (IFLA) directory of library schools made no serious attempt to cover this aspect, although it does mention a few archival training courses. The International Council on Archives (ICA) has made two attempts to compile a working directory of archival training courses, but both were

seriously defective even at the time of their publication. These studies (Kecskemeti, 1966; Le Moel, 1984) attempted to analyze the content of courses as well as providing a directory. They omitted courses and institutions in all parts of the world, but they particularly failed to acquire information about courses in the Eastern bloc and in the far East and in Latin America. In a period of rapid development and change they became out of date quite quickly.

The ICA's committee on professional education and training (ICA/CPT) has attempted to remedy this lack of knowledge by establishing an updatable database of archival trainers and training schools. This database is held at the Rijksarchiefschool in the Netherlands (by courtesy of the Director, Peter Sigmond), and there is close cooperation between it and the similar database held by IFLA at its headquarters nearby. As an indication of its progress, whereas the Le Moël directory listed 83 courses or schools in 32 countries, the ICA/CPT survey now has 130 entries in 56 countries. Although it does have entries for, for example, the USSR, China, and several Latin American countries, it is acknowledged that its coverage is still not adequate in any of these three areas and probably in others.

Turning from lists of archival trainers and training schools or courses to the underlying question of manpower, we know even less in global terms. A UNESCO meeting in 1979 commissioned studies both on course construction and syllabus (Delmas, 1979) and on manpower needs (Cook, 1979). the latter study also contained a rudimentary directory of training provision, which did not appear in the Le Moël guide which was published five years later -- an illustration of the difficulties of handing on useful information across institutions with a language difference.

The examination of the manpower situation as revealed in the 1979 conference resulted in several interesting conclusions. It was clear, firstly, that there was a shortfall both in personnel and in training provision, in all parts of the world, but that the problem was different in different regions.

In terms of crude numbers, the most urgent need for new archivists and records managers was greatest in Europe and in North America: this was because there was a continuing expansion of services there, particularly in areas outside government. The need for new personnel and for training was much less in the Third World, expressed in terms of figures: but the urgency of the need, naturally, was much greater. A single individual could sometimes make a radical difference in a small African country (for example), and 50 new graduates of a training scheme could make an impact over the whole continent. This was the experience of the UNESCO-backed regional training schools in Africa, at Dakar and Accra.

During this period, the convention of counting professional posts at two levels -- the fully professional and the intermediate -- was adopted. It will be no surprise that it was difficult to devise criteria by which these levels could be established, and to relate them to educational levels. When, as presumably will happen, we come eventually to work at comparability and transferability of qualifications, there will be some fancy manipulation of the statistics. A crude calculation in the 1979 paper was that world-wide there were 18000 archivists in post, with another 13000 posts awaiting recruitment, as part of planned development (this of course was before the worst of the recession). Counting the problem of untrained personnel in post, the immediate training need was for actual training provision (for the most part in the wrong places) for something like 3200 trainees.

These figures, appalling enough in themselves, were worse because of the distortion caused by regional imbalance. Africa and Southeast Asia appeared to be the most seriously lacking in provision, but it must be admitted from the start that there was the usual lack of information (in the West) about the USSR and China, and only patchy understanding of the Hispanic world. (Interestingly, the increase in mutual communication between the Anglophone and the Hispanic -- including Lusophone -- groups has been a marked feature of the last decade.)

The Role of Theoretical Models

Work on devising the most appropriate curricula for training in archives and records management has largely been derived from pragmatic studies, mainly sponsored by UNESCO, on services to meet the needs of particular countries. This was the approach established by a seminal study (d'Olier & Delmas, 1975). Using this framework, it is possible to build a model national archives and records service which incorporates growth and the development of functions.

The basic functions of such a service can be listed under the heading of four areas:

1. Acquisition, custody, and care of the central historical archive of the country; arrangement and description associated with this; provision of access by users to this core

2. Repair and restoration; basic conservation management of the core materials; some reprographic services

3. Records management for central government, in two stages:

a) responsibility for semi- or non-current accumulation of records, their maintenance, retrieval of information from them, and disposal; running records centers with appraisal;

b) cultural, research, education and outreach activities, and full collaboration with other information services.

Using this analysis, one can build a model which starts with the most basic set of services (area (a)), requiring a minimum of perhaps 3 professional and 3 support staff, in a small developing country; progressing through a stage in which conservation begins to take a part (area (b)), and bringing the professional staff up to 6; and on to a fuller service, involving records management at different levels of activity, and other culturally based services, and requiring a minimum professional staff, in a small country, of 15-20. Of course, these numbers must be multiplied many times in the case of the larger countries. It is obvious that the training function is essential in carrying out this development process.

By using theoretical models based on the development of functions it is possible to estimate the numbers of trained professional staff that would be needed by any country, or any sector of society, at a given time. These figures can then sometimes be checked against the actual situation in comparable places. It is felt that this method can be used to evaluate the progress made by non-governmental sectors or by regional or provincial governments in advanced countries, as well as by the smaller developing countries for which the method was devised.

Problems of Resourcing and Provisioning Training Courses

Archival training schools, of course, share most of the problems of resourcing common to all training schools in the information sector. They have some of their own as well. The most basic problem is that of numbers. Typically, the total number of students in place or planned at any one time is likely to be too small to be economic, while at the same time the range of subjects required to be taught would require the services of several teachers. As many as eight lecturers, not all full-time, would be needed to teach the curriculum proposed by the UNESCO study of 1986, for example (Cook, 1986). A special drawback is that with numbers like these it is impossible to use statistical standards of comparison with training courses in other disciplines.

The imbalance of numbers between students and teaching staff means that archival training must normally be associated with larger institutions, this association generally bringing as many drawbacks as advantages. In the past, the association

generally adopted (as in many European countries) was with schools of historical studies. Today, the trend is towards associating archival courses with schools of information science, and there has been much discussion of the possibilities of developing harmonized or common core subjects which will bring the archivists and records managers into closer association with the librarians and information scientists.

Other problems specific to the resourcing of archival training schools center upon teaching facilities. (Here there may well be common problems with information studies.) The aim must be to produce self-reliant professionals who can tackle problems and provide a self-evidently valuable service, visibly user-oriented and efficient in the use of scanty resources. The kind of training course needed to produce such people must first of all be competitive in recruitment, and secondly, must adopt teaching styles needed in the environment generally called 'open': seminar rooms with movable furniture and adjustable space, as opposed to formal lecture halls. Teaching equipment, including practice laboratories, is also needed. Even before we consider information technology, this amounts to a heavy requirement for a small institution.

Where budgeting is concerned, archival schools have always tended to find the disadvantage of attachment to a larger institution. Where different departments compete for a share in the same income, it is natural that the larger departments will do better. An important reason why archives and records management services have so often sought to remain independent of the other information services, is precisely this one: by this means, direct competition for the same funds is avoided.

Linguistic and Cultural Boundaries

In the 1979 study, the importance of linguistic and cultural boundaries appeared as a major factor in the lack of communication and comparability of services when viewed as a world-wide scene. Leaving aside the USSR and China, about which ignorance is profound in western Europe, there were a number of distinct models based upon national or linguistic traditions, which were so distinct from each other that real comparison or interchange seemed impossible.

The principal linguistic-cultural models which had value outside their own countries were:

French (specifically the Stage International Technique)
Open enrollment in terms of nationality; concentration on professional and technical services and management; highly practical and exposed to the best current practice

Anglo-American
: Strictly postgraduate courses (that is, no element of general education) aimed at vocational competence, often using practitioners in posts, such as part-time teachers, and based upon universities, which would provide infrastructure facilities and parallel courses

Hispanic
: First-degree courses (that is, including a large amount of general education) including elements of archivistics, historical sciences, usually run in conjunction with courses for other information workers, especially librarians, but not aimed specifically at vocational competence

Outside this group, the archival schools of most European countries appeared to follow an early nineteenth century model, characterized by prestigious independent schools specializing in the historical sciences. The most popular of these, almost amounting to a distinct model of training practice, was the Italian system of schools of archivistics, paleography, and diplomatics, run without any aim at producing professional competence. The French model (the Ecole des Chartes), however, provides an important contrast: here professional competence is the direct aim, and there is liaison with library and museum education, but the school provides a full degree course from the start of university-level education.

The difficulty of finding meaningful comparisons between these groups are clearly great. However, developments over the last decade have in fact been significant in closing the gap. The principal development has been the emergence of a Hispanic and Lusophone group of professionals who have been determined to professionalize the courses and to bring together the information professions. The development of the regional training school in Cordoba, Argentina was the most significant step, but elsewhere national training courses have visibly been responding to new attitudes. This has been clearest, perhaps, in Portugal and Peru, but has also occurred elsewhere. In Brazil, the main development has been in schools of information science, but this may be expected to have an effect on archives and records management training.

Information Technology

Archives and records management are as likely to be apt for automated practices as any other of the information sciences, though possibly the potential range of technologies is less. Certainly harmonized Information Technology (IT) studies have been recognized at a series of international meetings.

If IT is needed in archival practice, clearly it is needed in archival training. The need to provide it in the educational setting represents another example of the 'development trap' experienced by the poorer countries. In fact, it is a development trap experienced very often by poorer training establishments in the richer countries too. Common use of IT is probably the most compelling of the reasons for bringing information training into a common institution with strong elements of harmonization. The automated systems taught, should, of course, be related to automated systems in use within a country's information services.

Professional meetings in all parts of the world over the last few years have been constantly reiterating the need for technological development. Archives and records management training for the less developed countries can not be conceived today without a strong element of IT. Effective IT training does require that students should have relatively free access to suitable hardware and software.

The coming of IT has also brought changes to professional practice, and to the ways in which professionals think about their work. The effect has been almost entirely beneficial, and is leading to a new concentration on developing interchangeable standards. It has also brought problems, including that of retraining professionals in post. The additional training need is coming to be perhaps the most obvious feature of archival development in all regions, and the most obvious preoccupation of professional associations.

The Harmonization Movement

The idea of harmonizing the structure of training between the three main information professions became a reality in 1974. The base document produced there (Harvard Williams & Franz, 1974) established the essential principle, that each of the professions would continue to need its own training course, but that these courses had a similar overall structure and could gain by being run by the same overall institution. Since then the precise ways in which common elements could be devised have been the subject of specific studies, the latest being the papers given to the IFLA international colloquium on education and training, August 1987.

An important recent development, and one arising from the work of ICA/CPT, has been the appearance of structures for bringing together professionals who are responsible for training programs in archives and records management. The first of the meetings envisaged for these people is planned for August 1988, in association with the XI International Congress on Archives in Paris. A second international gathering for professors, lecturers, and tutors on archival training programs is fixed for Bologna, at the end of April 1989. Further such meetings will occur in different parts of the world in subsequent years. This

very welcome new development does not, of course, solve the problem of communication between those training for information science and librarianship. The absence of direct communication between training institutions in the information services is possibly one of the most glaring features of the information scene worldwide.

The future of the harmonization movement would seem to lie in building up a relationship between the information science courses and schools, and their teaching staff, and the archives and records management schools and courses. It is quite remarkable that up to now there has been no apparent move in this direction, at least on the international level. This paper seeks to raise one specific proposal, that one of the planned international colloquia for teachers of professional studies in archival training schools, should be given the assignment of establishing diplomatic relationships with comparable teachers in schools of information science.

REFERENCES

COOK, Michael. (1979). The Education and Training of Archivists: Status Report of Archival Training Programmes and Assessment of Manpower Needs. Report for Meeting of Experts on the Harmonization of Archival Training Programmes, Nov. 1979. Paris, UNESCO. (PGI/ET/HARM/5)

COOK, Michael. (1986). Guidelines on Curriculum Development in Information Technology for Librarians, Documentalists, and Archivists. Paris, UNESCO. (PGI-86/WS/26)

DELMAS, B. (1979). La Formation des Archivistes: Analyse des Programmes d'Etudes de Différents Pays et Réflexion sur les Possibilités d'Harmonisation. Study for the Meeting of Experts on the Harmonization of Archives Training Programmes, Nov. 1979. Paris, UNESCO. (PGI/ET/HARM/6)

D'OLIER, J.H. and B. DELMAS. (1975). Planning National Infrastructure for Documentation, Libraries and Archives. Paris, UNESCO.

HAVARD WILLIAMS, P. and E.G. FRANZ. (1974). Planning Information Manpower. Intergovernmental Conference on the Planning of National Documentation, Library and Archives Infrastructures, Paris, Sept. 1974. Paris, UNESCO. (COM-74/NATIS/Ref. 5)

KECSKEMETI, C. (1966). La Formation Professionelle des Archivistes: Liste des Ecoles et des Cours de Formation Professionnelle d'Archivistes. Paris, ICA/UNESCO.

Le MOEL, M. (1984). Annuaire des Ecoles et des Cours de Formation Professionnelle d'Archivistes. Paris, ICA.

CATALOGING RULES AND DATABASE PRODUCTION -- IMPLICATIONS FOR MANPOWER TRAINING IN A DEVELOPING COUNTRY

Björn V. TELL
Expert to the Swedish UNESCO Commission
Lund University Library
Lund, Sweden

Introduction

Since Callimachus' time cataloging has been a subject of interest to all true librarians. Nobody can keep in mind if a certain book, periodical, or document is kept in a library. Therefore, the collections have been registered in lists or catalogs which during the millennia have become more and more sophisticated. The earliest lists recorded the title or incipit, i.e. the first words of the text of the work, the author if known, the extent of the work such as the number of scrolls, tablets, or codices required to transcribe it, the location in the library, and perhaps its provenance, and the name of the scribe who had copied it.[1] Callimachus's catalog was catalogue raisonne, that is, it contained much more information than an ordinary library catalog, providing for each writer a brief biographical sketch and a list of his works, including lost ones. Any doubts about the authenticity of the book was also noted, and it was arranged according to large categories, such as epic, oratory, and history.[2]

In our days, the traditional cataloging has become an art. However, its present descriptive pattern should be questioned. Which librarian would be satisfied with less than a comprehensive cataloging according to AACR2, preferably also according to the universal UNIMARC system, if he/she wants to be a la mode? To this then comes classification to the last digit in UDC or Dewey. The introduction of computerized means has not essentially altered this pattern. For most librarians the computer is only a more or less improved typewriter which transcribes the traditional cataloging records in an online catalog in the mass memory of the computer. The records could then be retrieved on the screen, most often by the same layout as used in the card catalog. Any forecast about manpower needs would, therefore, extrapolate from the present qualifications. However, there are signs that we approach a time of discontinuity, and we may ask for other qualifications.

During the last decades the use of natural language and abstracts, augmented titles and lists of contents have started to prevail in some computerized information retrieval systems.

Hitherto, that has not influenced to any noticeable effect the traditional descriptive and subject classified catalog in the library computer. The fact is that library schools all over the world have, if anything, rather complicated the cataloging process by means of the computer, instead of teaching how to simplify, augment with elements of interest to the user and make use of the computer for complicated searches.3

The preoccupation with so called assigned attributes seems to have distorted the views of many librarians. Assigned attributes are those provided by librarians or others responsible for organizing and providing access to books and documents. According to Swanson[4]:

These attributes might include subject headings, classification categories, index terms, and other forms of descriptors. They result from acts of human judgement and may draw upon a broad base of knowledge of the context within which a work belongs and within which it might be used. Most important, they are subject to differences of opinion, and it is well known that in practice such differences tend to be considerable.

There is little interest in helping the users by utilization of the so called inherent attributes. They are essentially provided by the authors. They include, for instance, author's own name and institution, abstract, words in the content list, sections and section titles, captions to tables and diagrams, footnotes, reference citations to other articles and books, or even all words in an article, their sequence or relative positions and their organization into sentences, and paragraphs. According to Swanson (op. cit.):

Inherent attributes are all objectively present in the sense that there is no room for disagreement that they indeed belong to the article. For the most part these attributes lend themselves to machine processes such as automatic indexing.

At present, the training in library schools and various courses concentrates on assigned attributes, such as deep classification, thesaurus terms, PRECIS Multiple Entry System, etc.

This has serious repercussions on the librarians in the Third World countries. While bilateral and multilateral aid funds are spent to train their librarians in the more and more complicated cataloguing and classification processes according to the conventions of the industrialized countries, collections of uncatalogued books are accumulating in their libraries. All those who are eager to read, the newly literate, are shut from these collections.

A Case Study from a Third World Country

In many libraries in South East Asia and in Latin America thousands of recent and pertinent but uncatalogued books are found on the shelves in closed stacks. The librarians would never think of a simplified or abbreviated cataloging in order to get the books out in circulation. Instead, in most cases, they demand more staff to solve the problem. Mostly, the authorities are concerned with the failure of the libraries to produce a throughput with their present staff -- why seldom the demand is granted.

In 1987 a big book festival took place in Managua, Nicaragua, on the invitation of the Minister of Culture, Ernesto Cardenal. The response from many countries was overwhelming. By the exhibitors the national library received as gift a considerable collection of Spanish and other foreign literature. The need for reading material is immense in a poor country such as Nicaragua which some years ago successfully concluded a literacy campaign. However, the thirst for books cannot be slaked by these new acquisitions which are stored on closed shelves. From the cataloging department only a small rill is trickling out. The collection just doesn't pass through the cataloging bottleneck. The present procedures would demand two years, at least, to process these books and during that time new books will accumulate in the library. At the same time there is a shortage of paper both for catalog cards and for printouts.

It might seem obvious that a return to the catalogs of the classical antiquity would be simpler. Anyhow, they fully satisfied the needs of the researcher at that time. With the new technology it is possible to give the incipit a new and augmented dimension to satisfy today's researchers. Reflexions of that kind were kept in mind when I went to Central America to serve as teacher in April, 1988.

The National Library of Nicaragua, Biblioteca Nacional Ruben Dario, disposes of five microcomputers holding hard disks, each one with a capacity of 3--40 MB, that is, enough to store more than 200,000 MARC records. Some have been acquired by UNESCO and others through bilateral aid from Sweden and the U.S. Thus, I brought one along on the plane as a gift from the Royal Library, Stockholm. All micros are IBM-compatible, using MS-DOS.

Many might hesitate to think about bringing modern technology such as micros to developing countries. Even if they have competent personnel to master them, there are so many causes for interruptions in their service. The power supply varies and often fails. Temperature and humidity raise to levels near or above the declared tolerance levels of the micros or diskettes. Such inconveniences can be mastered, however, by air conditioning, using stabilizers, battery backup and memory backup units. It could be mentioned that already in 1985 Nicaragua counted over 350

micros in various locations. Over a dozen of its documentation centers dispose of one or more micros.

All respect to sophisticated hardware, but it is no use if staff is not provided a thorough training in the handling of the software. A UNESCO project had allocated funds for training on the spot in Managua by two foreign experts, Mrs. Guilda Ascenio from the UNESCO-office in Caracas, and myself. We gave a workshop in the Biblioteca Nacional about the use of CDS/ISIS, the system for micros that UNESCO is launching in the Third World, for over two weeks.[5]

The prerequisite for admission to the workshop was that participants should have passed a basic course in MS-DOS. Knowledge and experience about the Disk Operating System MS-DOS is a necessary condition for the proper functioning of ISIS. From experience, I thought that the knowledge level barely would be up to the level, and that appeared to be the case. Therefore, I had prepared a compendium about DOS for ISIS application that was distributed beforehand. One day exercises were set aside for such training.[6]

The UNESCO colleague and I then ran the workshop for two weeks, eight hours a day during a most severe heat period. Of the twelve participants, ten were from the cataloguing department of Biblioteca Nacional, and two came from outside documentation centers. As we could divide the participants on the micros, three on each device, each had ample time for practice.

Two weeks might seem to be a long time for training only in ISIS, but in reality the time was too short to give a thorough training on all the details needed. Since we had only one printer at our disposal, it was necessary to transfer the ISIS files to a WordStar program to show the results of the ISIS processing on the screen. On the other hand, that gave a good training in the export and import of records in the CCF/ISO format, a facility that ISIS is good about, because it has an excellent file transfer capability. However, the Spanish version of ISIS and the corresponding manual were not available at the time of the workshop, so that did not facilitate our work. ISIS is not simple, but its documentation is at least surmountable, if not very clear. A good tutorial is still missing.

When it was time to enter catalog records, the latest ones made manually in the library were used as specimens. In fact, they had emerged after much worry and enduring trouble with the Spanish version of AACR2, the Dewey system, and the Cutter numbers for shelfmarks. The productivity in the cataloging department was about 8 records per cataloger a day. That explained the great backlog of uncatalogued books.

ISIS has very good search facilities for using natural language, classification codes, or controlled terms. A record can hold several thousands of characters. We thought this was a good foundation for introducing abbreviated cataloging together with title augmentation by more inherent attributes, and making use of the potentials of the micros for searching. That would increase the productivity considerably. Taking the classical catalog as a model, we proposed a simplified catalog record.

However, as when introducing automated processes, the problems commonly arise outside the computer room.[7] The catalogers knew their job. It had taken them so much pain to realize that their earlier experience of manual cataloging now was going to be transferred from the typewriter to the micro, and they thought they could live with that change. On the other hand, they could not master a more fundamental change in method, such as introducing free-text indexing and searching. As Swanson has expressed: "Librarians can use the system, but they cannot change it".[8]

When discussing the number of necessary elements, there were no means to convince them that less than 16 different elements would suffice. Even the name of the responsible cataloguer should be included in their record. Deep classification according to the last digit in Dewey was needed together with Cutter numbers to put the books on the shelves. Why simplify a computerized record when it so easily can store so much?

We argued that ISIS has the facility to augment already inputted records afterwards, whereby a step-by-step approach could be taken if needed. Thus, catalogers, even if not fully qualified, could be used for input. So, why not start with a minimum of elements in the first round, in order to speed up the cataloguing and get the books out to the public? The shelves were a scarce resource in the library. The use of Dewey and Cutter numbers as shelf marks implied that there should be empty space on the shelves to insert new books. That caused everlasting space problems and removals on the shelves. It seemed logical to propose a broad subject division for the shelving together with the introduction of numerus currens as shelf marks. The chronically scarce shelving space would then be used to maximum. However, such a change would need a lot of conditioning.

Such matters as the comprehensiveness of the cataloguing record and the shelfmarks are in the end a management problem. Since the national librarian had left the country just before the workshop, and nobody had been appointed as successor, the only thing we could do as consultants was to leave a number of recommendations to be acted upon in an uncertain future.[9]

Discussion

What has been discussed so far is a case study, in order to identify some findings which have bearings on the qualifications required for catalogers. The present cataloguing rules poorly adapted to computerized systems of a more advanced type such as ISIS. AACR2 and the Common Communication Format- CCF among other things give rise to unnecessary duplications with all kinds of chances to err. Actually, the cataloger helps the computer, instead of the opposite. Also, the fact is overlooked that if needed, each element in a machine readable record can serve as "main entry."

AACR2 is so complex that it is often difficult even for experienced catalogers to identify a correct rule to use in a given situation and to implement that rule after it has been located. The Library of Congress has found it necessary to design its own Rule Interpretations. As Borko points out,[10] it seems reasonable to design an expert system to aid the cataloger. With that aim the LIBLAB of the University of Linkoping, Sweden, studied AACR2 by building a number of small knowledge based systems with the cataloging rules as knowledge domain. The result was that AACR is so self-contained that cannot serve as basis for an expert system.[11] There have been a number of projects elsewhere looking at the application of expert systems to AACR2, but as a critic eventually expressed:[12]

> I am pleased that LIBLAB moved away from this area of study to the potentially much more profitable and exciting project of developing a catalog based on the use of hypertext techniques -- HYPERCAT.

Hierarchial classification schemes give work to the classifiers, but at the same time they put up a barrier between the author and the user. That barrier could only be overcome by more generous usage of inherent attributes of the books, such as subtitles, abstracts, or content lists.

Much development work to include more inherent attributes has been used with promising results and has come to maturity.[13,14] Already, such methods are used on a regular basis to establish bibliographic databases.[15] Many librarians maintain that KWIC- and KWOC-indexing cannot be accepted compared with manual indexing, in spite of the users' different meaning. Another effort to provide access to recorded information has been the development of citation indexes. Therefore, has not the time come when we may ask with Curtis Wright:[1] Should they (the catalogers) perpetuate the ancient cataloguing practices devised for managing things (books), or invent new procedures capable of managing ideas?

The gap between the knowledge of existing cataloging and classification systems and the understanding of the potential

search opportunities of the computer is at present very great. That holds not only for librarians in developing countries, but also for the industrialized countries. The research about computer generated catalogs and the manner in which the user community reacts has not been visible to the extent that it is accepted in training in the use of online catalogs in the library schools. Any manpower forecasting thus becomes spurious, as shifts can occur suddenly.

The paper has a purpose other than the creation of confusion about what to do with catalogers and the teaching of cataloging. If it failed to demonstrate its function, this discussion might do the job. The catalogers, the people we love to hate, concentrate their efforts on assigned attributes without exploring the inherent attributes more than AACR2 prescribes. This has serious repercussions for Third World librarians. Their catalogers may not know that big libraries such as the Library of Congress have found it necessary to establish individualized Rule Interpretations. Collections of uncatalogued books are accumulating in the libraries of the developing countries, because they cannot cope with complicated cataloguing and classification processes according to the conventions of the industrialized countries. It is even worse when the vernacular is different from the language in the rules.

Before stating manpower demands and making forecasts, we ought to ask some questions:

* Have Third World countries, for the sake of internationalism, refrained from serving their users out of local collections to the extent it is possible with present software?

* What has been done in order to measure the output of the extant cataloguing processes from the user's viewpoint?

* To what extent do catalogers in the Third World use AACR2, Dewey and such conventions for bibliographic descriptions of local collections, and to what extent do they use simplified cataloguing?

We have come to a state in development when such questions should be given some thought. The developing countries are to a large extent beginning to use personal computers for building bibliographic databases. To master this the personnel need to know how the interface between man and computer works. The operation of these interfaces are discussed in the software package and the manual as command language. Different brands of microcomputers speak different languages. Those who want to run CDS/ISIS package need to have access to an IBM compatible microcomputer, and must

learn MS-DOS (which is not so easy). Those who prefer DBase3 or Sci-Mate also need to know about MS-DOS.

In the case study from Nicaragua the software packages MS-DOS, CDS/ISIS, and WordStar were used. For my part, however, I prefer Macintosh. The interface is more easy to handle. Using the mouse as a pointing device I can more easily run the system without bothering about command languages. With software packages such as Guide, the Hypertext for Macintosh, the following feasibility study has been made in order to show the capabilities of the personal computer.

The examples are built upon some of the principles and ideas in the HYPERCATalog project, mentioned in the paper. HYPERCATalog is not an existing system but a research program. Its library catalog is an extension and enhancement of the traditional catalog. It uses pre-created bibliographic records when available, but contains more and other information on individual items than present catalogs. It is rich in links and relationships between fields, records, and files. It has facilities for using all these.

This is not the time to go into more details about HYPERCATalog. Two samples have been built in order to demonstrate some of its features. These serve to show how bothering about bibliographic details in the traditional catalog doesn't impress the user. Instead, HYPERCATalog gives him ample opportunities to search, browse, and navigate until he finds the text of interest.

More and more publications are coming out on electronic media. They can easily be integrated as full text into the HYPERCATalog. While the traditional catalog usually answers queries such as "Where can I find out how high Mount Everest is?" The intention of HYPERCATalog and hypertext is to answer the query directly: "How high is Mount Everest?"

As we see the microcomputers spreading around and extensive memories greatly increasing capacity, we realize that computers will shortly be able to store full text to the extent we should like. We could facilitate movement toward that goal, now, by helping the user. For instance, we could include content lists or add captions to illustrations, tables, and diagrams. Such activities will enrich the cataloger's work. You need not to be a full-fledged cataloger to make such input. Catalog enhancements and changing responsibilities will result in more queries:

* Who in the library schools will take up that ball nationally, and who will do it internationally?

* Shouldn't we have a cataloging revolution in the library world to extend the capabilities of the catalogs to help our users?

The first example deals with my paper. At first look, it is rather lapidary. However, it is a HYPERCATalog paper written with GUIDE. The user can look up any of the following extensions: title, content list, abstract, conclusions, and references. The references are nested, which means that the user is first given the authors, and if he wants the full reference, he has immediate access by pushing the cursor to the author's name. In this sense HYPERCATalog creates multiple levels and relationships between various bibliographic elements in the online mode.

The various levels are difficult to visualize in the linear mode this paper is written. However, the overheads will give you some idea about how it works. The extensions are stored on a level different from this one. When a user browses the first level in the online mode, he can press the mouse button on a word or expression, if he wants to know more. In this way another level is reached. The extension pops up on the screen. That extension on the second level gives the catalog new dimension. Preparations for the second level can be made now, by including more inherent attributes when cataloging books.

Already the inclusion of a content list would be valuable for the user. It should be included as a standard procedure when cataloging. It goes without saying that words in the content lists can be searched in the Guide but also by such systems as ISIS, WordStar. SciMate, DBase3, etc. On the other hand, abbreviated or short-term forms of bibliographic records should be used as standard cataloging procedures in local collections.

That means that the downloading of MARC or similar records should pass a reducing filter before entering the local catalog. Local bibliographic descriptions should use short-entry standard forms. UNESCO should convene specialists to settle such short/entry standard forms, and recommend the use of content lists in the records. A software such as ISIS can accommodate such extensions, because it can handle several thousands of characters in a record.

From my experience, most Third World countries are short of paper for printouts, and as often they are short of catalog cards. In an online catalog, there may be no need for printouts. The catalog stays in the micro. In that sense, it should be mentioned that Guide created records are different from those where a word processor has been used.[16]

Conclusions

The strict adherence to the AACR2 and detailed classification schemes such as Dewey and UDC as qualifications for catalogers, hampers a creative development in the Third World countries. These is a need to get away from the present conventions in the industrialized world. On the other hand, the Western countries

ought to clarify the obstacles blocking the road to a development towards a descriptive cataloging more adapted to computerization and available new software. Perhaps, they ought to return to the catalogs of classical antiquity, but in a modernized form by more conscious usage of the inherent attributes of the books as search tools. A constructive change in this field depends to a great extent on the specialized knowledge that FID, IFLA, and UNESCO can bring about and lend prestige to, because it will have implications for manpower training, and eventually for manpower forecasting because other skills may be need to be taught.

REFERENCES

1. HICKEY, D.J. Cataloguing. In: ALA World Encyclopedia of Library and Information Services. 2nd ed. Chicago, 1981, p. 169 ff.

2. WRIGHT, H. Curtis. Callimachus. In: ALA World Encyclopedia of Library and Information Services. 2nd ed. Chicago, 1981, pp. 152-153.

3. SELLBERG, R. The Teaching of Cataloging in U.S. Library Schools. Libr. Res.& Techn. Serv., 32 (1) 1988: pp. 31-41.

4. SWANSON, D.R. Libraries and the Growth of Knowledge. Library Quarterly, 50, 1980: p. 119.

5. Mini-micro CDS/ISIS. Introductory Guide + 3 Diskettes. Paris, UNESCO, Division of the UNESCO Library,1986.

6. TELL, B. Introducción al Sistema MS-DOS para CDS/ISIS. Lund, 1988.

7. TELL, B. The Automation of Library Operations: Some Aspects of Policy Directions and Attitude Changes. Tidskr. Dokument. 40 (2/3) 1984: pp. 33-40.

8. SWANSON, D.R. Miracles, Microcomputers and Libraries. Library Journal, 1982: p. 1059.

9. TELL, B. Proyecto FiT/Nicargua, Biblioteca Nacional. Progress Report, May 13,1988. 11 p. (UNESCO/SIDA 516-Nic-84)

10. BORKO, H. Artificial Intelligence Research and its Possible Impact on Information Services and Education. Paper presented at the FID/ET Pre-Congress Workshop at Hague, 17-20 Sept.,1984, p. 14.

11. HJERPPE, R. & B. Olander. Artificial Intelligence and Cataloguing. Building Expert Systems for Simple Choice of Access

Points for Entries. Results and Revelations. Linkoping, 1985. LiU-LIBLAB-R: 1985: 1.

12. BRYANT, P. LIBLAB --A Personal Assessment. Paper submitted wedish Delegation for Scientific and Technical Information. Sept. 1987: p. 10.

13. ATHERTON, Pauline. Books are for Use. Final Report. Syracuse, 1978. 172 p. (IST-10).

14. WORMELL, I. Subject Access Project -SAP. Improved Subject Retrieval for Monographic Publications. Thesis. Lund, 1985. 147 p.

15. TELL, Bjorn. Deep Analysis of Book Contents -- Fact Retrieval from Government Committee Reports Using the SAP-Technique Online. In: Future of Library Networks. Essen Symposium 16-18 Sept. 1981. Essen University Library 1982: pp. 115-126.

16. DEBUSE, R. So That's a Book...Advancing Technology in the Library. Information Technologies & Libraries, March, 1988: pp. 7-18.